Vol. 1025 Number 2

OFFICIAL GAZETTE

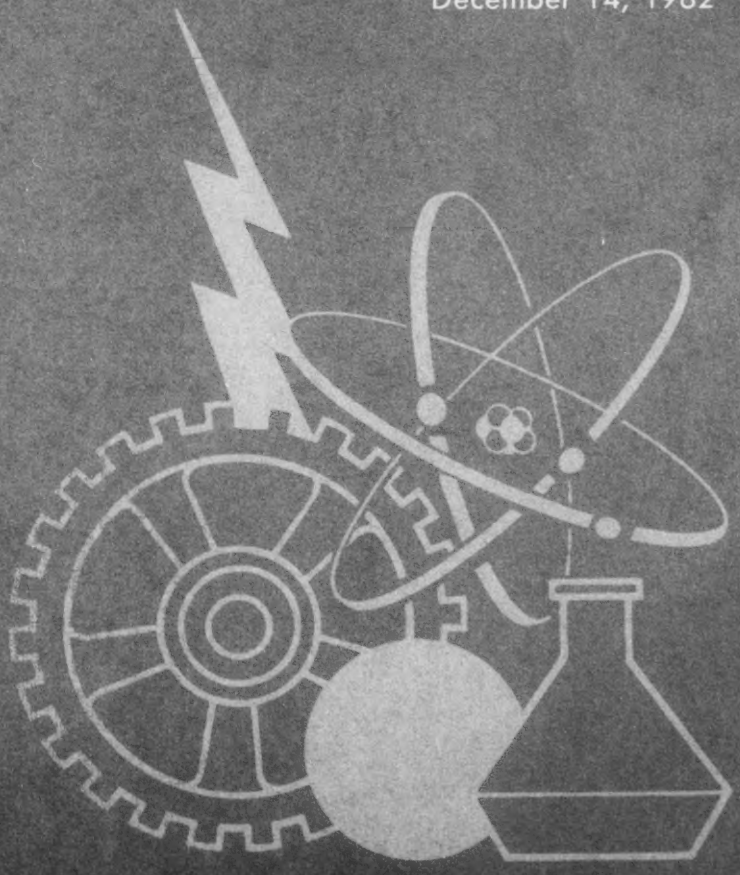
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

December 14, 1982



U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

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U.S. Edition

BASIC FACTS
about the
PATENT COOPERATION TREATY (PCT)

A new international system for the filing of your *foreign* patent applications *in the United States of America*

Do you want to protect your invention in several countries?

Then, you should consider the advantages that are offered by filing "international" patent applications under the Patent Cooperation Treaty (the "PCT").

Do you want to calculate your chances of protecting your invention before major costs in foreign countries are incurred?

Then, you should consider the relevance of the "international search" which is carried out on every international patent application.

Do you want to keep open your options to protect your invention while investigating its commercial possibilities abroad?

Then, you should consider the extra time you gain when you file an international application.

Do you want to see your invention tested against prior art before you incur high costs for national procedures?

Then, you should consider that the "international search report" contains a list of documents potentially relevant as to prior art and is sent to all of the countries in which your international patent application under the PCT is maintained by you after you have evaluated the international search report.

Do you want to have strong patents abroad?

Then, you should take into account the international standards which are applied by the "International Searching Authorities" which carry out the international search of your application. This provides not only the starting point of evaluations in examination countries but a better foundation for patents in registration countries.

How complicated are the basic facts referred to above?

They are not complicated at all. Just by reading the eleven paragraphs below you will learn the basic facts which at least you should know about the PCT.

(1) Your right to file an international patent application

You, as a national or a resident of the United States of America, are entitled to file an international application, since the United States of America is a Contracting State of the PCT, which allows only nationals and residents of Contracting States to file international patent applications.

(2) Where to file your international patent application

You must file your international patent application with the United States Patent and Trademark Office (USPTO) which is a PCT "receiving Office," that is, an Office which receives international applications.

(3) The effect of your international patent application

Your international patent application has the effect of a national patent application—or, as far as certain European States are concerned, of an application for a European patent—in those among the PCT Contracting States listed at the end of this brochure which you "designate" in your application. Because your international patent application is prepared in accordance with international standards effective in all of the PCT Contracting States, subsequent amendment because of varying national (or regional) requirements (and the cost associated therewith) will not be necessary. The granting of a patent remains the responsibility of the national Offices (or the European Patent Office) but the start of the national processing (national phase), including examination, is delayed until the end of the 20th month from the priority date (see (10), below).

(4) The cost of filing your international patent application

Because it is an international patent application effective in all designated PCT Contracting States, you do not have to incur the costs connected with the simultaneous preparation of multiple applications and you have to pay only a single set of fees for the filing of your international patent application with the USPTO. An indication of the amounts of the international fees can be obtained from the USPTO. Those fees cover the filing, searching and publication (see (9), below) of your international patent application. They are payable in US dollars at the USPTO. National fees in the designated States, because processing is delayed (see (10), below), become payable much later than if you do not use the PCT and they are lower for international applications in several countries and the European Patent Office.

(5) The language of your international patent application

Your international patent application must be filed in English. Nevertheless, it has the effect of a regular national filing also in PCT Contracting States having an official language other than English (e.g., Japan). In those States, the furnishing of a translation, because processing is delayed (see (10), below), is required much later than if you do not use the PCT.

(6) Claiming priority of an earlier application

In your international patent application, you may claim the priority of your earlier patent application, whether it was a national, a regional or an international (PCT) application.

(7) The quality of international search

Every international patent application is subjected to an international search, that is, a high quality search of the patent documents and other technical literature at least in those languages in which most patent applications are filed (English, French, German, Japanese and Russian). The high quality of the search is assured by the international standards prescribed in the PCT for the documentation to be consulted, qualified staff and search methods of the International Searching Authorities which, for your international patent application, are the USPTO or the European Patent Office, at your option. The international search is to be distinguished from any substantive examination as to patentability and the decision on the granting of a patent, which remain the task of the national or regional Offices designated in the international application.

(8) The value of the international search report

The results of the international search are given in the international search report which is made available to you by the fourth or fifth month (or tenth month, if no priority under the Paris Convention is claimed) after the application is filed. The international search report contains no comments on the value of your international application but gives citations in relation to the claims of your international application of relevant prior art, if any, and an indication of its possible relevance for novelty and inventive step (non-obviousness). This enables you to calculate your chances of obtaining a patent in the countries you have designated. A search report which is favorable, that is, in which the citations of prior art would not prevent the grant of a patent, assists you in the later prosecution of your application in the countries in which you wish to have protection. The high quality of the international search made by the USPTO or by the European Patent Office assures you that any patent granted is a "strong" patent, that is, one which is unlikely to be successfully challenged, and thus provides a sound basis for investment decisions.

(9) Confidential nature of international patent application

Until international publication (18 months after the priority date), no third person or national or regional Office is allowed access to your international patent application unless so requested or authorized by you. If you wish to withdraw your application (and do so in time before international publication), international publication does not take place. Furthermore, international publication does not take place if only the United States of America is designated.

(10) Delaying of procedure before the national and regional Offices

When an international application has been filed, all national procedures in the designated States are delayed until the end of the 20th month (in the Australian, European and Hungarian Patent Offices, the 21st month) after the date of filing (or priority date where priority under the Paris Convention is claimed). The delay gives you eight months (in the Australian, European and Hungarian Patent Offices, nine months) more than if you do not use the PCT for evaluating your chances of getting patents and exploiting your invention commercially in the various designated countries, for initiating the national phase in those countries by furnishing translations, appointing agents and paying national fees, and for incurring the expenses connected therewith. In the said evaluation, you have the assistance of the international search report. If you

decide not to proceed further (which you may do even after international publication), you have saved all of these expenses. If you decide to proceed further, you have delayed all these expenses by eight (or nine) months.

(11) Procedure before the national or regional Offices

Your prosecution (substantive examination and other processing) of your international application before the national and regional Offices is made easier by the international search, which enables you to make necessary amendments to your application even before the national or regional procedure starts (you can do this centrally before international publication) and you will save costs for adaptation of your application to different national requirements, including any requirement to submit new original drawings. You also make other savings in communications, postage and translations from the work done during the international processing and not repeated before each designated Office (for example, submission of priority documents in single rather than multiple copies).

* * *

If, knowing these basic facts, you would like to have more detailed information, consult the "PCT Applicant's Guide," which provides a complete set of instructions for filing international patent applications, your patent attorney, the USPTO or contact WIPO:

WORLD INTELLECTUAL PROPERTY ORGANIZATION
34, chemin des Colombettes
1211 Geneva 20
Switzerland
Phone (022) 999-111 *Telex 22376*

The "PCT Applicant's Guide" may be ordered from WIPO's sales agent:

PERGAMON INTERNATIONAL INFORMATION CORPORATION
1340 Old Chain Bridge Road
McLean, Virginia 22101
Phone (703) 442-0900 *Telex 90-1811*

PCT Contracting States*

(as of October 1, 1982)

In Africa:	Cameroon, Central African Republic, Chad, Congo, Gabon, Madagascar, Malawi, Senegal, Togo
In the Americas:	Brazil, United States of America
In Asia and the Pacific:	Australia, Democratic People's Republic of Korea, Japan, Sri Lanka
In Europe:	Austria, Belgium, Denmark, Finland, France, Germany (Federal Republic of), Hungary, Liechtenstein, Luxembourg, Monaco, Netherlands, Norway, Romania, Soviet Union, Sweden, Switzerland, United Kingdom

* These Contracting States are expected to be joined by others. For the current list of Contracting States, consult WIPO's publications or write to WIPO for information.

X/82

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,807,602, Re. S.N. 427,083, Filed Sept. 29, 1982, Cl. 222/01, METHOD AND APPARATUS FOR DISPENSING A FLUIDIZABLE SOLID FROM A PRESSURE VESSEL, Walter Meichsner, Owner of Record: *August Thyssen-Hutte Ag., Duisburg, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 241

3,890,882, Re. S.N. 428,004, Filed Sept. 29, 1982, Cl. 91/487, FLUID DEVICE HAVING PLASTIC HOUSING AND MEANS FOR MOUNTING A CYLINDER BARREL, Wilfred S. Bobier, Owner of Record: *Inventor,* Attorney or Agent: John G. Batchelder, Ex. Gp.: 343

4,203,788, Re. S.N. 379,936, Filed May 19, 1982, Cl. 156/44, METHODS FOR MANUFACTURING CEMENTITIOUS REINFORCED PANELS, Theodore E. Clear, Owner of Record: *Inventor,* Attorney or Agent: Herbert C. Brinkman, Ex. Gp.: 161

4,281,952 Re. S.N. 379,633, Filed May 19, 1982, Cl. 414/82, METHOD AND APPARATUS FOR STACKING CEMENTITIOUS REINFORCED PANELS, Theodore E. Clear, Owner of Record: *Inventor,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 310

4,330,334, Re. S.N. 424,682, Filed Sept. 27, 1982, Cl. 106/90, MODIFYING MORTARS OF INORGANIC BINDING AGENTS WITH ALKLATED SULPHONATED PHENOLFORMALDEHYDE CONDENSATION PRODUCT, Kurt Schaupp, et al., Owner of Record: *Bayer Aktiengesellscaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 113

4,354,775, Re. S.N. 427,738, Filed Sept. 29, 1982, Cl. 222/193, PNEUMATIC LINE CLEAN OUT DEVICE, Leon C. Jalas, Owner of Record: *Inventor,* Attorney or Agent: Lucas J. de Koster, Ex. Gp.: 313

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,292,235, Reexam. No. 90/000,282, Requested: Nov. 1, 1982, Cl. 29/26R, MACHINE TOOL WITH A COMBINED TOOL STORAGE AND CHANGING MECHANISM, Kurt A. Riedel, Owner of Record: *Kearney & Trecker Corp., West Allis, Wis.,* Attorney or Agent: Cyril M. Hajewski, Ex. Gp.: 320, Requester: Owner

3,963,842, Reexam. No. 90/000,286, Requested: Nov. 10, 1982, Cl. 427/305, DEPOSITION OF COPPER, Christian Sivertz, et al., Owner of Record: *London Laboratories Ltd. Co., Woodbridge, Conn.,* Attorney or Agent: Anthony P. DeLio, Ex. Gp.: 160, Requester: Daniel A. Boehnen, Chicago, Ill.

4,010,756, Reexam. No. 90/000,284, Requested: Nov. 8, 1982, Cl. 128/786, HEART PACER LEAD WIRE WITH BREAK-AWAY NEEDLE, Jacques DuMont, et al., Owner of Record: *Ethicon, Inc., Somerville, N.J.,* Attorney or Agent: Robert L. Minier, Ex. Gp.: 330, Requester: Owner

4,071,987, Reexam. No. 90/000,288, Requested: Nov. 10, 1982, Cl. 52/94, GRAVEL STOP, John B. Hickman, Owner of Record: *W. P. Hickman Co., Asheville, N.C.* Attorney or Agent: John A. Artz, Ex. Gp.: 350, Requester: Owner

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EXAMINATION

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, Apr. 12, 1983.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. 1.341(f) when you apply to take the examination, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that your prepare and prosecute applications for patent. After passing the examination, you will be considered eligible for registration. If you are disqualified for registration under 37 C.F.R. 1.341(f) when you apply, approval of your application to take the examination will be subject to the following conditions.

1. If you pass the examination, you will not be registered so long as you remain disqualified for registration under 37 C.F.R. 1.341(f). However, if within one (1) year from the date notification of passing is mailed, your status changes and you are no longer disqualified under 37 C.F.R. 1.341(f), you will be considered eligible for registration upon satisfactory proof of your change in status.
2. If you have not become registered within one (1) year from the date notification of passing is mailed, you may not become registered thereafter except upon taking and passing another regularly scheduled examination.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $75 fee not later than Jan. 31, 1983.

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plz., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

DONALD J. QUIGG,
Nov. 18, 1982. *Chairman, Committee on Enrollment.*

PATENT NOTICES

Certificates of Correction for the Week of Dec. 14, 1982

D. 266,478	4,313,951	4,332,876	4,344,654
4,160,840	4,314,287	4,333,041	4,344,775
4,163,015	4,314,773	4,333,296	4,344,827
4,177,448	4,317,920	4,334,472	4,345,284
4,229,252	4,318,514	4,334,950	4,345,626
4,242,473	4,320,064	4,336,318	4,346,099
4,254,095	4,320,459	4,336,719	4,346,342
4,263,762	4,320,936	4,337,449	4,348,090
4,271,604	4,321,492	4,339,903	4,348,411
4,277,370	4,321,922	4,339,987	4,349,001
4,293,350	4,325,746	4,340,676	4,349,354
4,293,482	4,326,813	4,340,794	4,349,488
4,293,705	4,326,851	4,341,036	4,350,958
4,296,597	4,328,686	4,341,638	4,351,002
4,297,959	4,329,029	4,341,723	4,351,027
4,300,177	4,329,600	4,341,890	4,352,147
4,302,845	4,329,765	4,342,360	4,352,631
4,310,531	4,330,432	4,342,608	4,352,808
4,310,726	4,330,662	4,342,612	4,353,598
4,311,153	4,331,894	4,343,697	4,353,833
4,311,616	4,332,173	4,343,889	4,354,106
4,312,862	4,332,177	4,344,003	4,354,163
4,313,035	4,332,197	4,344,050	4,354,255
4,313,880	4,332,808	4,344,631	

Disclaimers

3,315,040. —*William J. Brorein,* Whippany, N.J. RETRACTILE CORD GROMMET FOR TELEPHONE SUBSCRIBER HAND SETS. Patent dated Apr. 18, 1967. Disclaimer filed May 17, 1979, by the assignee, *GK Technologies, Inc.*

Hereby enters this disclaimer to the remaining term of said patent.

4,129,047. —*Arthur E. Dornan,* Ypsilanti, Mich. CONTROL ARRANGEMENT. Patent dated Dec. 12, 1978. Disclaimer filed Oct. 29, 1982, by the assignee, *Massey-Ferguson Inc.*

Hereby enters this disclaimer to claims 1, 2, 7, 8 and 9 of said patent.

4,194,023.—*Donald R.Cushman,* Wenonah; *Charles A. Pagen,* West Deptford and *John W. Schick,* Cherry Hill, N.J. CONTROLLED DEPOSITION OF ASPHALT EMULSIONS. Patent dated March 18, 1980. Disclaimer filed Oct. 7, 1982, by the assignee, *Mobil Oil Corp.*

Hereby enters this disclaimer to claims 1, 2, 4, 6 and 8 of said patent.

4,218,203.—*Peter J. Tilgner.* Akron, Ohio. MULTI-STATION REACTION INJECTION MOLDING APPARATUS. Patent dated Aug. 19, 1980. Disclaimer filed Jan. 7, 1982, by the assignee, *The Upjohn Co.*

Hereby enters this disclaimer to claim 1 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF October 16, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-27-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-18-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-08-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-02-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	2-02-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	10-20-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	8-22-80

Expiration of patents: The patents within the range of numbers indicated below expire during October 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,209,369 to 3,214,766, inclusive

Plant Patents ..... Numbers 2,558 to 2,565 inclusive

REISSUES

DECEMBER 14, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,100

TORQUE LIMITATION DEVICE FOR A DRUM BRAKE

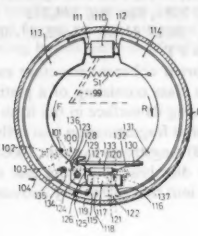
Leslie C. Chouings, Holly Croft, Bourton, near Rugby, Warwickshire, England

Original No. 3,951,243, dated Apr. 20, 1976, Ser. No. 552,107, Feb. 24, 1975. Application for reissue Nov. 26, 1979, Ser. No. 97,301

Claims priority, application United Kingdom, Feb. 28, 1974, 9197/74

Int. Cl.³ F16D *51/20*

U.S. Cl. 188—328 5 Claims



7. [A brake according to claim 1] *A drum brake comprising a drum, two shoes mounted within the drum for movement between operative and inoperative positions, spring means biasing the shoes to their inoperative positions, a shoe actuator interposed between adjacent one ends of the two shoes, a shoe abutment and torque limitation means arranged to provide a clearance having a predetermined value when the shoes are in their operative positions and the drum is rotating in one direction and to eliminate or substantially to eliminate said clearance in response to the reactive forces generated by the shoes due to their engagement with the drum when the shoes are in their operative positions and the drum is rotating in the opposite direction thereby producing a lower torque between said drum and said shoes than when said drum is rotating in said one direction so that, when the drum is rotating in said opposite direction, a greater movement apart is required of said one ends of the shoes by said actuator from the positions said ends occupy when the shoes are in their inoperative positions to obtain a given braking torque than is required to obtain said braking torque when the drum is rotating in the one direction and the torque limitation means being arranged so that, with the drum rotating in either of said directions and with the shoes in their operative positions, said reactive force generated by one of the shoes acts to tend to reduce said clearance, to torque limitation means comprising a lever mounted to pivot with respect to a fixed part of the brake and being connected with the other ends of the shoes, the engagement of the lever with said shoe ends being at different moment arms about the lever pivot for the two shoe ends, the lever being biased to a rest position which it takes up when the shoes are in their inoperative positions, whereas when the shoes are in their operative positions, said reactive forces (1) hold the lever substantially in its rest position when the drum is rotating in said one direction and (2) pivot the lever to eliminate or substantially eliminate the clearance when the drum is rotating in said opposite direction, said brake* characterised by the provision of disabling means operable to prevent pivotal movement of the lever to reduce the clearance.

Re. 31,101

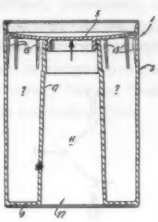
CHILD RESISTANT PACKAGE

Walter G. Berghahn, and Martha L. Berghahn, both of Scotch Plains, N.J., assignors to Bristol-Myers Company, New York, N.Y.

Original No. 4,109,785, dated Aug. 29, 1978, Ser. No. 853,609, Nov. 21, 1977. Application for reissue Jan. 29, 1981, Ser. No. 229,686

Int. Cl.³ A45C *13/10, 13/18*

U.S. Cl. 206—1.5 14 Claims



1. A child resistant package comprising in combination a container body *having an upper free margin* and removable cap means *having an upper surface*; said container body being open at the top and being provided with a closed bottom and outer side wall;

support means on said container body for supporting said cap means *below said upper free margin of said container body* when positioned on said container body *whereby said upper surface of said cap means is spaced below said upper free margin of said container;*

a passageway through said body having an opening to the outside of said container body and extending from a point on an outside wall thereof remote from said cap to a point adjacent said cap means whereby access may be had to said cap means from outside said container body through said passageway;

said passageway being wide enough to just about accommodate an average adult finger but longer than the average child's finger;

the distance from said passage opening to the point on the cap means on which pressure may be applied to pop the cap means off the container being longer than the average child's finger but about as long as an average adult finger.

Re. 31,102

Patent Not Issued For This Number

Re. 31,103

CROSSLINKING AGENT FOR POLYMERS AND WIRE CONSTRUCTION UTILIZING CROSSLINKED POLYMERS

Alan J. Gotcher, Saratoga; Paul B. Germeraad, Palo Alto, and Viktors Jansons, Los Gatos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

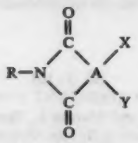
Original No. 4,121,001, dated Oct. 17, 1978, Ser. No. 759,473, Jan. 14, 1977. Application for reissue Oct. 16, 1980, Ser. No. 197,660

Int. Cl.³ B32B *15/00;* H01B *7/00;* C08F *2/46*

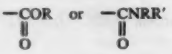
U.S. Cl. 428—35 27 Claims

1. A composition comprising an organic crosslinkable polymer having a melt processing temperature of at least 200° and

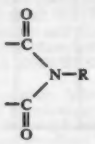
from about 0.1 wt % up to about 30 wt % of crosslinking agent said crosslinking agent comprising a compound of the formula



wherein X is hydrogen and Y is



and X and Y are substituents on adjacent carbon atoms of A or wherein X and Y together form the imide ring system



which is joined to A on adjacent carbons atoms, thereof, wherein A is an aromatic, heteroaromatic, alicyclic, or heterocyclic system or an open chain aliphatic moiety, where R is vinyl, allyl, methallyl or propargyl and wherein R' is hydrogen, C_1 to C_{12} alkyl or R, or a mixture of said compounds.

Re. 31,104

CATALYTIC STRUCTURE

Alfonso L. Baldi, Wynnewood, Pa., and Victor V. Damiano, Pennsauken, N.J., assignors to Alloy Surfaces Company, Inc., Wilmington, Del.

Original No. 4,154,705, dated May 15, 1979, Ser. No. 755,738, Dec. 30, 1976. Continuation-in-part of Ser. No. 576,981, May 13, 1975, Pat. No. 4,041,196, and Ser. No. 507,126, Sep. 18, 1974, abandoned, each is a continuation-in-part of Ser. No. 466,908, May 3, 1974, Pat. No. 3,958,047, and Ser. No. 328,378, Jan. 31, 1973, Pat. No. 3,867,184. Application for reissue Feb. 13, 1981, Ser. No. 234,315

Int. Cl.[3] **B01J** *21/04, 23/42, 23/60, 23/74*

U.S. Cl. 252—466 PT **19 Claims**

1. A self-supported coherent structure essentially of metal selected from the class consisting of a platinum family metal [and nickel] having its surface in the form of a three-dimensional micro-fissured fragmentation into cells principally ranging from about 500 Angstroms to about 5000 Angstroms in size and produced by dissolving out from that surface a different metal introduced into that surface by activated pack diffusion.

PLANT PATENTS

GRANTED DECEMBER 14, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,964

BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Apr. 16, 1981, Ser. No. 254,905

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has fair to good timber quality, is fast growing, has fairly strong central stem tendency; earlier than average in time of leafing, pistillate flowers mid-season, pollen sheds early to mid-season, produces biennial crops of small nuts; averages 2 per cluster, the percentage of weight of kernel to nut averages approximately 15 percent; nut bearing begins early in life of tree.

4,965

PLUM TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Aug. 17, 1981, Ser. No. 293,301

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, particularly characterized by the regular and very productive bearing of semi-freestone fruit which ripens about with, and most nearly resembles, the fruit of the Eldorado, but, in comparative distinction, the globose fruit of the present variety has red flesh, whereas the oblate fruit of the Eldorado has yellow flesh.

PATENTS

GRANTED DEC. 14, 1982

ERRATA

For CLASS	See PATENT NO.
604–281	4,363,323
436–019	4,363,633
436–527	4,363,634
436–132	4,363,635
420–454	4,363,659
426–262	4,363,810
200–302	4,363,965
378–110	4,363,971
372–053	4,364,015
361–175	4,364,111

PATENTS

GRANTED DEC. 14, 1965

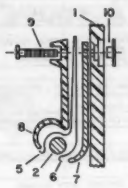
INDEX

PATENTS

GRANTED DECEMBER 14, 1982

GENERAL AND MECHANICAL

4,363,140
FOOTBALL HELMET FACE GUARD
James V. Correale, 4202 Lake Grove Dr., Seabrook, Tex. 77586
Filed Jul. 27, 1981, Ser. No. 287,251
Int. Cl.[3] A63B *71/10*
U.S. Cl. 2—9 **5 Claims**

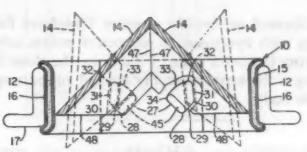


1. In combination, a football helmet and the like, a grid-type face guard therefor, leaf spring steel side clips attached to the outside of each side of said helmet, said side clips each positioned and formed to clasp a vertical bar of the face guard when in its protective position, at least one forehead clip attached to the outside of the forehead portion of said helmet, said forehead clip comprising (a) a spring clip formed from an outer and inner leaf of spring steel, said spring clip positioned and formed to clasp the horizontal bar of the face guard extending across the lower portion of the helmet protecting the forehead, and (b) a strip of rigid metal positioned between the spring clip and the helmet, said strip of rigid metal being conformed to prevent any substantial downward movement of said horizontal bar of the face guard in response to a force applied to and toward the face guard, all of said clips formed to hold the face guard firmly in its protective position and release it from the helmet in response to a pull on the face guard and away from the helmet.

4,363,141
QUILT FOR USE IN WHEELCHAIRS
Elizabeth Doster, 966 Glennan Dr., Redwood City, Calif. 94061
Filed Nov. 28, 1980, Ser. No. 211,263
Int. Cl.[3] A41B *1/12*
U.S. Cl. 2—69.5 **4 Claims**

1. A quilt for use by wheelchair occupants, comprising a pouch for the lower legs of the occupant having a back panel which extends up behind the legs of the occupant and terminates at the back of the knees without extending under the buttocks, a front panel extending up over the knees and lap of the occupant, the bottom of the pouch being wide enough for the feet of the occupant, said back panel having a hem at the top and a drawstring in said hem to draw said hem around the knees of the occupant, aid hem being formed with openings at either side, said drawstring extending out through said openings.

4,363,142
PROSTHETIC HEART VALVE
Louis C. Meyer, Denver, Colo., assignor to Mitral Medical, Inc., Wheat Ridge, Colo.
Filed Oct. 12, 1979, Ser. No. 84,318
Int. Cl.[3] A61F *1/22*
U.S. Cl. 3—1.5 **17 Claims**



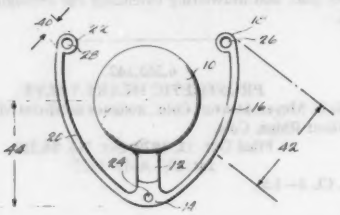
1. A prosthetic heart valve comprising:
an outer peripheral, generally annular body having an inner wall surface;
a pair of occluder leaflets disposed in said body, each including opposed lateral edge surfaces and leading and trailing edge surfaces; and
leaflet-supporting means operative to support said leaflets for movement in response to reversals in the direction of fluid flow through said body between an open position in which said leaflets are substantially parallel to one another within said body and a closed position in which said leaflets extend angularly across said body with said leading edges abutting one another, said leaflet-supporting means having lateral projections on opposed lateral edge surfaces elongated in a direction parallel to said lateral edge surfaces and guide pocket means for each of said lateral projections, each said guide pocket means being in the form of a shallow, multi-sided guide channel having opposite side edges divergent in a downstream direction, said lateral projections insertable in an associated channel and slidable through said channel between said opposite side edges, each pair of said guide channels on opposite sides of said leaflets formed symmetrically about a plane passing through the longitudinal axis of said valve body and intermediately between each channel of a pair, each channel having a generally convex downstream edge and an oppositely disposed, relatively straight upstream edge, said guide pocket means operative to guide pivotal and limited translatory movement of each said leaflet between said open and said closed positions in response to reversals in the direction of fluid flow through said body.

4,363,143
INTRAOCULAR LENS
Wayne B. Callahan, 1135 Scenic Dr., Milton, W. Va. 25541
Filed Sep. 9, 1981, Ser. No. 300,594
Int. Cl.[3] A61F *1/16*
U.S. Cl. 3—13 **10 Claims**

1. An intraocular lens suitable for use as an artificial lens implant, comprising:
a medial light focusing lens body having predetermined diameter and thickness and having a generally circular periphery;
a stem protruding from the periphery of the lens body to an outer edge thereof formed as a stem footplate adapted to make contact with the eye tissue;

first and second flexible members extending from opposite sides of the stem substantially at the outer edge thereof from the lens body;

the end of each of the first and second flexible members



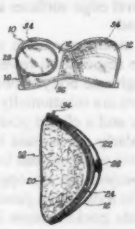
being formed as flexible member footplates for making contact with eye tissue at respective points substantially 120° from the outer edge of the stem, the three footplates forming a three-point equally spaced support system for the lens body.

4,363,144

PROSTHETIC DEVICE FOR MASTECTOMY PATIENTS

Helen G. Goad, 9459 Mission Gorge Rd. #124, Santee, Calif. 92071

Filed Oct. 24, 1980, Ser. No. 200,204
Int. Cl.³ A41C *3/08*
U.S. Cl. 3—36 **1 Claim**



1. A prosthetic device comprising:

(a) a brassiere with two cups having fastening means on the interior of at least one of the cups;

(b) a prosthetic pad having first releasable attachment means for removably attaching same to said fastening means, whereby said prosthetic pad is selectably wearable in said brassiere or removable from said brassiere for washing or replacement;

(c) said prosthetic pad being constructed of interior padding having a resilient form-retaining contoured front cover and a flexible cloth wrapper encapsulating said padding and front cover and said flexible wrapper has a frontal edge and is bunched and stitched together just short of said frontal edge to secure said padding and cover in place and so that the frontal edge itself is free to expand outwardly into a tuft to simulate a nipple;

(d) a slip having a second fastener means proximate the upper frontal portion thereof and wherein the top portion of said brassiere has second releasable attachment means releasably engageable by said second fastener means to support said brassiere, whereby the principal support for said brassiere is provided independently of body-encircling straps; and

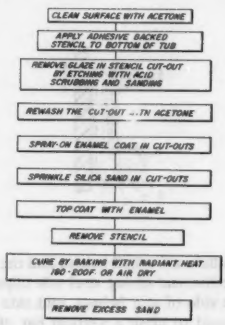
(e) said brassiere having bottom edges and the sole rear support for said brassiere being a strap for fastening same to the body of the user, said strap being connected to the bottom edges of said brassiere and passing posteriorly of the wearer and being releasable from said brassiere from either end to permit single-handed right or left handed operation.

4,363,145

TRACTION MEANS ON SHOWERING SURFACES AND METHOD OF PRODUCING THE SAME

Stanley Kawesch, 3206 NW. 88 Ave., Sunrise, Fla. 33321

Filed Apr. 2, 1981, Ser. No. 250,180
Int. Cl.³ B05D *5/00*
U.S. Cl. 4—583 **10 Claims**


CLEAN SURFACE WITH ACETONE
APPLY ADHESIVE BACKED STENCIL TO BOTTOM OF TUB
REMOVE GLAZE IN STENCIL CUT-OUT BY ETCHING WITH ACID SCRUBBING AND SANDING
REWASH THE CUT-OUT ...TH ACETONE
SPRAY-ON ENAMEL COAT IN CUT-OUTS
SPRINKLE SILICA SAND IN CUT-OUTS
TOP COAT WITH ENAMEL
REMOVE STENCIL
CURE BY BAKING WITH RADIANT HEAT 180 - 200F. OR AIR DRY
REMOVE EXCESS SAND

1. The method of applying a traction means in a predetermined pattern to a glazed vitreous enamel surface including:

(a) cleaning the glazed vitreous enamel surface with a cleaning agent;

(b) securing a stencil having cutouts therein to the surface;

(c) removing the glaze adjacent the stencil cutouts by etching with acid;

(d) rewashing with the cleaning agent the cutout surfaces from which the glazing has been removed;

(e) applying a coat of acrylic urethane enamel on the cutout surfaces;

(f) sprinkling silica sand on the enamel coat of the cutout surfaces;

(g) top coating the silica sand with acrylic urethane enamel;

(h) removing the stencil;

(i) curing the resulting traction means of the previous steps; and

(j) removing any excess sand.

4,363,146

EYE WASH FOUNTAIN

John R. Liautaud, 180 Stonegate, Cary, Ill. 60013

Filed Jul. 6, 1980, Ser. No. 166,986
Int. Cl.³ A61H *33/00, 33/04*
U.S. Cl. 4—620 **13 Claims**

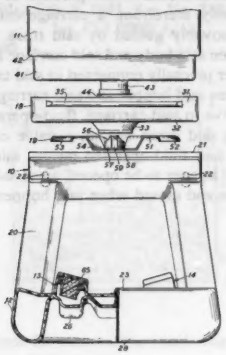
1. A portable wash fountain adapted for quick refill comprising:

a basin housing having spray nozzle means positioned thereon, an open top defined by upstanding sidewalls of said housing, and flow channel means extending from an inlet end recessed in said upstanding sidewalls adjacent said open top to said spray nozzle means,

a separate tray member defining an open volume and having a bottom wall formed with an orifice for facing said inlet end of said flow channel means and sidewalls adapted to be fitted against said open top sidewalls,

a separately removable bottle means for containing a wash liquid having a neck opening at an upper end, said bottle means for being mounted through said open top and said upper end adapted to be received in said tray member for firm support thereof by said tray member and open top sidewalls such that said neck opening extends into said tray member orifice, and

cap means sealably fitting over said spray nozzle means to block flow therefrom and readily removable from said



spray nozzle means when flushing with wash liquid is desired.

4,363,147

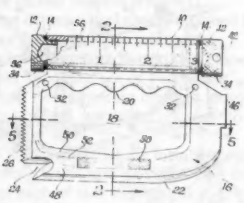
SURVIVAL TOOL

Melvin T. Deweese, P.O. Box 157, Warner Springs, Calif. 92086

Filed Sep. 12, 1980, Ser. No. 186,679

Int. Cl.³ B25F *1/00*

U.S. Cl. 7—158 **6 Claims**



1. A survival tool comprising:

(a) a body portion defining a central void;

(b) a cutting edge defined by one edge of said body portion;

(c) a hollow socket member integral with the edge of said body portion opposite said cutting edge to serve as an axe handle mount and convert said tool to a serviceable axe and serviceable also as a handgrip usable by extending the fingers through said void and gripping said socket member with the hand;

(d) cap means for enclosing said socket to define a supply container when said kit is not in service as an axe; and

(e) said cap means including at least one cap with a smooth cavitated interior whereby said cap is useful as the upper pivot bearing of a rotated fire starter stick.

4,363,148

SHOE SOLE ATTACHING PRESS

Anton Muhlbach, Frankfurt am Main, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

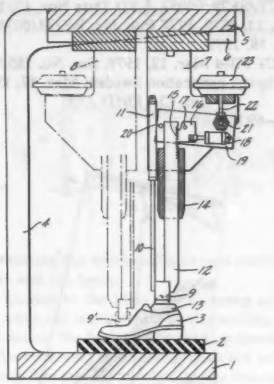
Filed Feb. 13, 1981, Ser. No. 234,112

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007830

Int. Cl.³ A43D *89/00*

U.S. Cl. 12—33 **7 Claims**

1. A press for attaching shoe components having an abutment supporting the shoe components concerned and a presser member movable by extending means in the direction toward the abutment into engagement with the respective shoe component, whereby the extending means operates in conjunction with interlocking means, which upon the presser member reaching the shoe component becomes locked to the extending means characterized in that the interlocking means forms the



link between the extending means and additional pressure means which upon becoming interlocked exerts a higher pressure onto the presser member than the extending means.

4,363,149

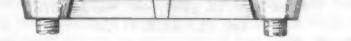
EARTHQUAKE-PROOF SHOE FOR BRIDGES

Tokio Kondo, 3-35-1-1003, Hamadayama, Suginami-ku, Tokyo-to, and Ryuma Morishige, 270-47, Fuse, Kashiwa-shi, Chiba-ken, both of Japan

Filed Feb. 5, 1981, Ser. No. 231,761

Int. Cl.³ E01D *19/06*

U.S. Cl. 14—16.1 **8 Claims**



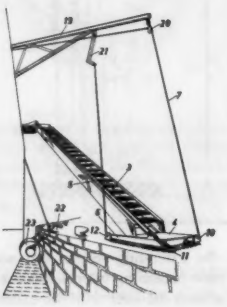
1. An earthquake oscillation absorbing shoe including: a lower shoe member having a pair of upstanding claws, one adjacent each end of said central portion; an upper shoe member seated on said lower shoe member between said claws, the ends of said upper shoe member being spaced from each of said claws to form a gap therebetween; a pair of packing elements, one seated in each of said gaps and contacting both said upper shoe member and the adjacent one of said claws; said packing elements each having a resilient rubber body characterized by a plurality of truss-like webs separated by openings to absorb relative oscillatory motion between said upper and lower shoes in the direction of the plane of the top surface of the lower shoe such as would be generated by an earthquake.

4,363,150

SHIP'S EMBARKATION DEVICE

Emanuel Nilsson, Västra Frölunda, Sweden, assignor to AB Welin, Goteborg, Sweden

PCT No. PCT/SE79/00052, § 371 Date Nov. 17, 1979, § 102(e) Date Nov. 13, 1979, PCT Pub. No. WO79/00784, PCT Pub. Date Oct. 18, 1979
PCT Filed Mar. 12, 1979, Ser. No. 185,905
Claims priority, application Sweden, Mar. 17, 1978, 7803135
Int. Cl.[3] E01D 1/00
U.S. Cl. 14—69.5 10 Claims



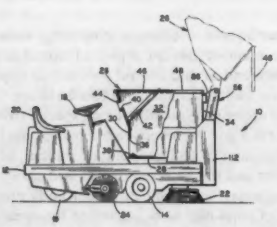
2. A ship's embarkation device comprising at least one projecting means, e.g. a ladder, to the one end of which there is pivotally attached a first platform connected to the ship's deck, and to the opposite end of which a second platform is pivotally attached, at least one torsion bar disposed under said projecting means, members on the ends of said torsion bar extending perpendicular thereto pivotally attached to the respective first and second platforms by first and second pivot axles, said torsion bar being arranged to strengthen the torsional resistance of the device and to take up the torsional forces between the platforms when the device is turned to and from the stowing position on deck, and means for hoisting and lowering the device and for turning the device to and from a stowing position on deck, including an attachment for a wire from a winch arrangement on the ship's deck arranged on said second platform, a roller arranged at the side of said second platform facing the ship's side, means with a curved path for the roller being arranged on the ship's deck catching the roller when the device is hoisted up to a substantially horizontal position, whereby the device is turned to the stowing position on the deck by further pulling of the wire.

4,363,151

RIDING SWEEPER WITH HIGH DUMP MECHANISM

Christopher M. Knowlton, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Mar. 16, 1981, Ser. No. 244,074
Int. Cl.[3] A47L 11/24
U.S. Cl. 15—83 10 Claims



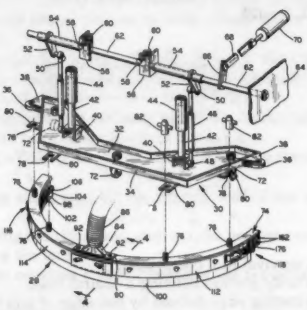
1. A surface sweeping machine comprising a body, wheel means for supporting said body on the surface, a rotatable drum broom supported under an intermediate portion of said body, track means at forward, side portions of said body and extending upwardly therefrom, a carriage extending across said body and movably guided by said track means, means connected between said body and said carriage for raising said carriage, a hopper pivotally connected to said carriage, means connected between said hopper and said carriage for pivoting said hopper relative to said carriage, fluid-operated means for rotatably driving said drum broom, a valve controlling the flow of fluid to said fluid-operated means, said valve being engagable by said hopper to be opened when said hopper is in its lowest position and closed when said hopper is raised.

4,363,152

SQUEEGEE ASSEMBLY FOR A SCRUBBING MACHINE

David J. Karpanty, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Feb. 19, 1981, Ser. No. 235,436
Int. Cl.[3] A47L 7/00
U.S. Cl. 15—98 12 Claims



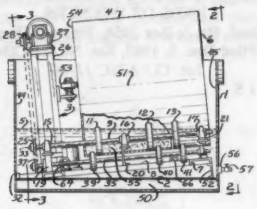
1. Squeegee apparatus for a scrubbing machine comprising a squeegee supporting member, means for connecting said squeegee supporting member to said machine, said squeegee supporting member having forward outer end portions and a rear intermediate portion, said supporting member having a downwardly-extending rear wall, a squeegee blade which is substantially continuous and uninterrupted from one end to another, two clamping bands extending along the rear wall of said supporting member and having inner ends near the rear intermediate portion of said supporting member and having outer ends near the forward outer end portions of said supporting member, means located at the rear intermediate portion of said supporting member and cooperating with inner end portions of said clamping bands for moving said bands toward said rear wall when said bands are moved toward said forward outer end portions of said supporting member, and means engagable with outer end portions of both of said clamping bands near said forward outer end portions of said supporting member for moving said outer end portions of said bands transversely toward said supporting member and toward said forward outer end portions of said supporting member, whereby said clamping bands hold said squeegee blade against said rear wall when said clamping bands are so moved by said engagable means.

4,363,153

INK TUB CLEANER

Sam S. Caravs, 7 Pembroke La, Oak Brook, Ill. 60521

Filed Feb. 9, 1981, Ser. No. 232,670
Int. Cl.³ B08B 9/18
U.S. Cl. 15—101 **17 Claims**



1. An apparatus for removing residual material from a cylindrical container which comprises:

A. moving means for supporting and rotating said container, said moving means comprising:

1. a base having an upper surface;
2. a pair of substantially parallel shafts rotatably coupled to said base above said upper surface;
3. at least two support wheels of substantially the same diameter rigidly attached to each of said shafts in a wheel-and-axle relationship, said shafts, support wheels, and base being situated so as to enable support of said container at its exterior curved surface on the outer perimeter of said support wheels;
4. at least one driven wheel rigidly attached to each of said shafts in a wheel-and-axle relationship;
5. an elongated frame attached to said base and extending above said upper surface of said base;
6. a rotational driving means coupled to said frame;
7. a driving wheel rotatably coupled to said driving means; and
8. a closed loop flexible tensile member engaged with the outer perimeters of said driving wheel and said driven wheels of each of said shafts so as to effect rotation of said driven wheels of each of said shafts in the same direction which in turn effects rotation of said support wheels via said respective shafts to effect rotation of said container when resting on said support wheels; and

B. a tank means having a bottom surface on which said moving means is rested, said bottom surface being adapted to accomodate said moving means with said container supported on said moving means, said tank means being capable of containing solvent to a sufficient depth to submerge at least a portion of said container when supported on said moving means and to effect contact of said residual material with said solvent.

4,363,154

MACHINE FOR REMOVING INK FROM OVERHEAD PROJECTOR ROLLS

Robert K. Lee, 1312 Parsnip Crescent, Prince George, British Columbia, Canada (V2M 4C41)

Filed May 14, 1981, Ser. No. 263,695
Claims priority, application Canada, Jun. 16, 1980, 354058
Int. Cl.³ B08B 11/20
U.S. Cl. 15—102 **22 Claims**

1. A machine for removing ink from an overhead projector roll of writing-film, comprising:

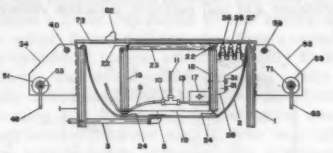
(a) means for holding the overhead projector roll of writing-film, the holding means permitting the roll of writing-film to rotate longitudinally and to be unrolled;

(b) a rotatable take-up spool for rerolling the writing-film, whereby the writing-film is transferred unrolled from the holding means to the take-up spool;

(c) means for turning the take-up spool;

(d) a basin located between the holding means and the take-up spool so as to permit the writing-film to travel unrolled across the basin as the writing-film is being transferred unrolled from the holding means to the take-up spool;

(e) a cover over the basin, a space between the cover and the



basin permitting the writing-film to pass unrolled between the cover and the basin;

(f) means, located in the basin, for spraying solvent of the said ink onto the writing-film as the writing-film travels unrolled across the basin to the take-up spool; and

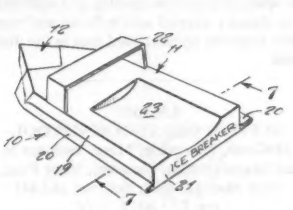
(g) means for removing said solvent from the writing-film as the writing-film travels unrolled to the take-up spool.

4,363,155

ICE BREAKER

Matthew J. Regina, 147-32 72nd Rd., Flushing, N.Y. 11367

Filed Nov. 3, 1980, Ser. No. 202,929
Int. Cl.³ B60S 1/04; A47L 17/06
U.S. Cl. 15—236 R **1 Claim**



1. An ice beaker comprising in combination, a main body member molded of rigid plastic material, and a tip member made of stainless steel, said tip member being affixed to a front end of said main body member; said main body member front end being tapered forwardly by means of forwardly converging flanged sides, said tip member being installed within a tapered point of said main body member, said tip member being sharpened to a forward apex; a rear wall of said main body member extending flat transversely across, an inverted, U-shaped handle across a top of said main body member, a curved depression on a top wall of said main body member extending rearwardly of said handle to said rear wall, and a recess hollowed out on an underside of said main body member.

4,363,156

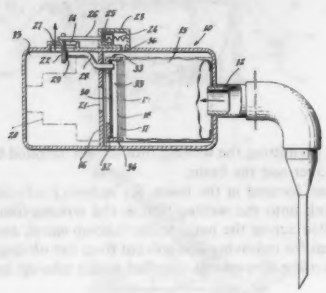
VACUUM CLEANER DUST CONTAINER HAVING COMPRESSING MEANS ASSOCIATED THEREWITH

Karl E. Leinfelt, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 14, 1981, Ser. No. 254,066
Claims priority, application Sweden, Apr. 18, 1980, 8002906
Int. Cl.³ A47L 9/12
U.S. Cl. 15—327 R **6 Claims**

1. In a vacuum cleaner having a working implement and having a suction chamber provided with an inlet for dust-laden air, a suction hose, a dust container, an outlet opening for cleaned air, and a motor-fan unit for transport of air from said

working implement through said suction hose and dust container, the improvement comprising: a housing constituting a pressure chamber and said suction chamber, said pressure chamber in said housing having said outlet opening and said motor-fan unit therein, said suction chamber having said dust container and an air non-pervious, closed bellows, a partition in said housing separating said suction chamber from said pressure chamber, said bellows being arranged between said dust container and said partition, a suction opening for said



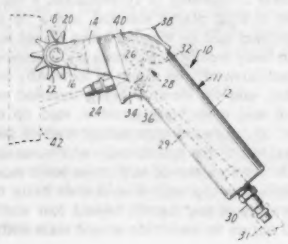
motor-fan unit in said pressure chamber located in said partition, means for selectively closing the outlet opening for cleaned air, means for removably sealing the suction opening in said partition, and an air conduit disposed so as to conduct pressurized air from said pressure chamber to the interior of said bellows when said suction opening and said outlet opening are closed to thereby expand said bellows and compress said dust container whereby accumulated dust in the dust container is compressed.

4,363,157

BUFFING PAD CLEANING TOOL

Richard F. McGrath, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 11, 1981, Ser. No. 262,481
Int. Cl.³ A47L *5/14*
U.S. Cl. 15—388 **3 Claims**



1. A cleaning tool for removing debris from buffing pads comprising:

a frame having a first end portion adapted for manual engagement and a second projecting end portion;

a plurality of spaced star wheels rotatably coaxially mounted in side-by-side spaced relationship on the second end portion of said frame;

an air nozzle mounted on said frame and positioned to direct air passing through said nozzle generally toward one side of said star wheels;

means affording coupling of a supply of high pressure air to said nozzle comprising a valve assembly having inlet and outlet ports and mounted on said frame, a passageway connecting the outlet port of said valve with said nozzle, and means for coupling the inlet port of said valve assembly to a supply of high pressure air; and

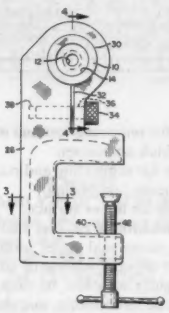
means mounted on said frame for manually activating said valve means.

4,363,158

DEVICE FOR INSTALLING HANDLE STICKS IN THE ENDS OF WIENERS

Carl P. Gerdlund, Rt. 3, Box 3956, Warren, Oreg. 97053

Filed Dec. 5, 1980, Ser. No. 213,234
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—1 S **6 Claims**



1. A device for installing handle sticks in the ends of wieners comprising

(a) a body member having opposite ends,

(b) a first bore leading in from one end of said body member and extending through a partial length of the latter,

(c) and a uniform diameter second bore leading in from the other end of said body member,

(d) said second bore joining with said first bore and being of enlarged diameter relative to said first bore forming an internal shoulder in said body member,

(e) said second bore being of a size arranged to freely receive a wiener endwise therein and arranged to stabilize the wiener against lateral movement with one end of the wiener abutted against said shoulder,

(f) said first bore being of a size which is arranged to slidably receive a handle stick and guide the stick substantially axially relative to a wiener in said second bore for installing a stick in piercing relation in end projecting relation in a wiener.

4,363,159

SEPARABLE FASTENING DEVICE

K. Edward Lischick, 306 White Ave., Northvale, N.J. 07647

Filed May 27, 1980, Ser. No. 153,017
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—201 HH **5 Claims**

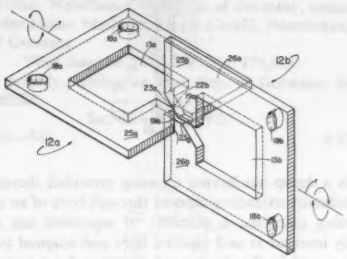
1. A separable fastening device comprising a pair of clasping members, each of said members being comprised of a rigid, bendable material having a central aperture extending therethrough and at least one substantially flat edge section, each flat edge section having:

(a) an internal angular notch;

(b) an external angular notch; and

(c) a slot in said edge section connecting the vertexes of said internal and external angular notches and dividing each edge section into split edge portions, said slot forming a gap having a thickness less than the thickness of the edge section of said other of said clasping members; whereby said clasping members are connected by engaging the external angular notches of each of said edge sections; rotating at least one of said clasping members toward the

other of said clasping members until the split end portions of each edge section are flexed apart axially and oppositely at each slot sufficient to allow lateral movement of one of said members with respect to the other of said members and moving the edge section of at least one of said clasping members inwardly with respect to said other member until said edge section of each of said clasping members enters the central aperture of said other member; and whereby said clasping members are disconnected by engaging the internal angular notches of each of said edge



sections, rotating at least one of said clasping members toward the other of said clasping members until the said split end portions of each edge section are flexed apart axially and oppositely at said slots sufficient to allow lateral movement of one of said members with respect to the other of said members and moving the edge section of at least one of said clasping members outwardly with respect to the other of said members until the edge section of said one of said clasping members lies outwardly of said edge section of said other of said clasping members.

4,363,160

FASTENING ELEMENT OF SYNTHETIC MATERIAL

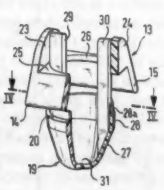
Günter Wibrow, Norderstedt, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 83,050

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840878

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—297 **5 Claims**



1. A one piece plastic fastening element, adapted to be received in a complimentary hole of a predetermined diameter in a plate-like support, including a cup-shaped hollow insert member open at one end, said insert member having a continuous wall and an external substantially continuous circumferential shoulder formed integrally intermediate the ends of said insert member for engaging beneath the underside of the plate adjacent the edge of the hole, a head member connected in spaced relation to the insert member having means for fastening an article to the carrier plate with either the article to be fastened or the head member lying in close contact against the side of the plate-like support opposite the side engaged by said circumferential shoulder, and connection means extending between, and substantially parallel to the axis of, the insert member and the head member, said connection means extends along the inside of the insert member axially below the circumferential shoulder, said connection means includes at least two connecting webs which are circumferentially spaced and connected at the upper ends thereof to the head member and at the lower ends thereof to the interior of the insert member below a plane passing transversely to the axis of the fastening element and through said circumferential shoulder, said insert member further includes a lower cup-shaped portion having an upwardly and radially flaring wall extending from a closed end, a generally cylindrical portion extending axially from said upwardly flaring wall, and a portion extending axially from said generally cylindrical portion having a reduced external diameter forming said continuous circumferential shoulder, whereby said reduced diameter portion forms an axially extending thin walled annular extension with a substantially unrestricted open end, said external diameter of said reduced diameter portion being slightly greater than the diameter of said complimentary hole whereby said extension is adapted to agressively seal against the side wall of said hole, said head having an opening therein axially aligned with the interior of said cup-shaped hollow insert member thereby permitting access to said interior through said head.

4,363,161

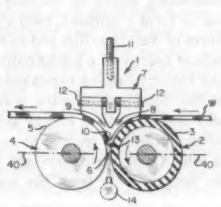
METHOD AND APPARATUS FOR THE COMPRESSIVE TREATMENT OF FABRIC

Frank Catallo, 84 Wheatley Rd., Old Westbury, N.Y. 11568

Continuation-in-part of Ser. No. 95,090, Nov. 16, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,301

Int. Cl.³ D06C *21/00*

U.S. Cl. 26—18.6 **18 Claims**



1. A method for the compressive treatment of a fibrous thread interlaced web material wherein said material is forced into a stuffing chamber formed by a space between a first movable uninterrupted cylindrical surface and a second movable uninterrupted surface and a smooth arcuate apex of a confining means extending in part between and spaced from the first and second surfaces with the confining means having a concave confining surface connecting with said apex spaced from and opposite the first surface and subtending an angle therewith, comprising the step of moving the first surface at a first rate of speed in a first direction to move said material between it and said confining surface towards and into said stuffing chamber, and the step of moving the second surface in a second direction opposite to said first direction at a second rate of speed slower than said first rate of speed to move said material in said second direction around said apex and out of said stuffing chamber.

8. An apparatus for the compressive treatment of a fibrous thread interlaced material where the apparatus comprises a first movable uninterrupted cylindrical surface, means for moving the first movable surface in a first direction at a first rate of speed, a second movable uninterrupted surface spaced from the first movable surface, means for moving the second movable surface in a second direction opposite to said first direction at a second speed rate of speed slower than said first rate of speed and a confining means spaced from the first and second movable surfaces having a smooth arcuate apex extending between and towards the first and second surfaces to form a stuffing chamber therewith into which material is adapted to

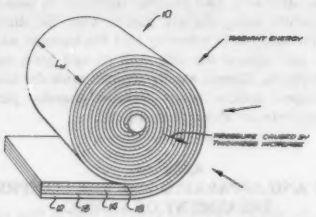
be moved by the first movable surface and from which material is adapted to be moved by the second movable surface around the apex, said confining means including a concave confining surface connecting with said apex spaced from and opposite the first movable cylindrical surface and subtending an angle with said first movable cylindrical surface.

4,363,162

INFRARED HEAT TREATMENT OF PLASTIC FILM CAPACITORS

Rick A. Price, R.R.#2, Box 35-H-13, Ogallala, Nebr. 69153

Filed Nov. 3, 1980, Ser. No. 203,523
Int. Cl.³ H01G *7/00*
U.S. Cl. 29—25.42 **12 Claims**



9. A process for manufacturing plastic film capacitors comprising the steps of:

(a) winding alternating layers of thermoplastic dielectric film and metal to form a cylinder, each cylinder having a plurality of turns of dielectric film and metal, respectively;

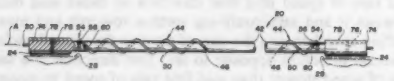
(b) applying radiant energy of a predetermined wavelength to the cylinder thereby causing shrinkage of the dielectric film, wherein the metal and dielectric windings transmit a portion of said applied radiant energy sufficient to cause the inner dielectric turns to receive an amount of energy per unit area which will cause shrinkage of the dielectric film to occur progressively from the inner turns to the outer turns.

4,363,163

QUENCH ROLL INCLUDING HELICALLY WRAPPED SUPPORT

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469

Filed Nov. 13, 1980, Ser. No. 206,405
Int. Cl.³ B21B *27/02*; C03B *35/18*
U.S. Cl. 29—127 **17 Claims**



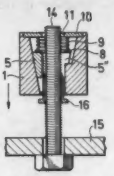
1. A quench roll for a quench unit of a roller conveyor type system for tempering glass sheets, said quench roll comprising: an elongated shaft that extends transversely to the direction of conveyance through the quench unit and which has a rotational axis so as to convey glass sheets supported by the shaft upon driving thereof about said rotational axis; an elongated support that is wrapped about the shaft in a helical configuration; said support including a core having opposite ends that are secured to the shaft; and the support having an outer covering of a nonmetallic material that is stable at a sufficiently high temperature so as to be capable of supporting a hot glass sheet on the shaft upon cooling thereof at the quench unit.

4,363,164

DEVICE FOR REMOVING DUMP NUT FROM BOLT

Hiroshi Okada, Seto, Japan, assignor to Mitsuchi Corporation, Nagoya, Japan

Filed Mar. 30, 1981, Ser. No. 248,668
Claims priority, application Japan, Apr. 9, 1980, 55-48021
Int. Cl.³ B25B *27/00*
U.S. Cl. 29—270 **1 Claim**



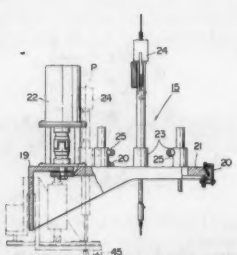
1. In a dump nut having a casing provided therein with a longitudinally extending tapered through bore of an upwardly increasing diameter, a plurality of separated nut segments slidably inserted in said tapered bore and adapted to be constantly urged in the downward direction by a spring, and a threaded bore defined by said nut segments into which a bolt is screw-fitted, a cylindrical nut removing device comprising two cross-sectionally arcuate complementary members which are oscillatably joined together at their adjacent side edges, said nut removing device being slidingly fitted around said bolt to thereby push said nut segments in the upward direction against said spring.

4,363,165

WIRE HARNESS

Yoshitsugu Suzuki, Mishima; Syogo Iizuka, Gotenba; Shigeo Kajiyama, Shizuoka; Kenji Usui, Gotenba, and Masahiro Kobayashi, Susono, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Division of Ser. No. 80,682, Oct. 1, 1979. This application Jan. 8, 1981, Ser. No. 223,233
Claims priority, application Japan, Sep. 29, 1978, 53-120280; Nov. 20, 1978, 53-142212; Nov. 20, 1978, 53-142213
Int. Cl.³ H01B *13/06*
U.S. Cl. 29—564.8 **7 Claims**



1. A device for manufacturing a wire harness comprising:

a wiring head body mounted to travel over a work table;

a wiring jig mount provided on said wiring head body and mounted to circulate in a horizontal plane;

a plurality of wiring jigs each inserted through a guide pipe vertically provided on said wiring jig mount to open above and below the wiring jig mount, said wiring jigs having a covered wire paid out therethough;

a means for raising and lowering selected one of said wiring jigs at a predetermined position; and

a clamping jig for contacting a wire, said jig being provided on the wiring head and mounted for vertical movement relative to the said wiring head and circular movement about the selected wiring jig positioned at said predetermined position, said clamping jig having a cutting edge.

4,363,166

AUTOMATIC TOOL EXCHANGER

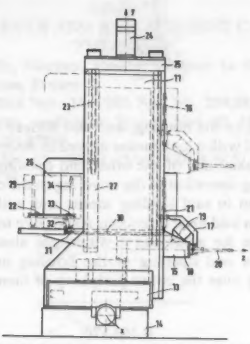
Norbert Hiller, Wendlingen, Fed. Rep. of Germany, assignor to Gebrueder Heller Maschinenfabrik GmbH, Nuertingen, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,019

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935523

Int. Cl.³ B73Q *7/00*

U.S. Cl. 29—568 **4 Claims**



1. A machine tool with an automatic tool exchange, comprising frame means including two upright columns (**11, 12**), yoke means (**25**) rigidly interconnecting said columns substantially at the top of the columns to rigidly hold said columns at a predetermined spacing from each other, said columns defining a central vertical plane extending substantially centrally through both upright columns, horizontal spindle means (**15**) movably located in said spacing between the upright columns (**11, 12**) and having a spindle axis (**18**) extending horizontally and perpendicularly to said central vertical plane, said spindle axis (**18**) extending from said columns on one side of said frame means, first guide means (**15'**) operatively mounted in said frame means adjacent to said one side of said frame means for guiding said spindle means (**15**) in its up and down movement centrally in said spacing along said one side of said frame means, separate tool magazine means (**22**), magazine support means (**26**) for movably mounting said separate tool magazine means to said frame means above said spindle means and in a constant spacial relationship to said spindle means but independently of said spindle means, said tool magazine means holding tools in a direction extending perpendicularly to said spindle axis (**18**), second guide means (**27, 28; 35, 36**) operatively mounted in said frame means substantially opposite said first guide means (**15**) adjacent the other side of said frame means opposite said one side of said frame means for guiding said magazine support means and with it the tool magazine means (**22**) so that the spindle means (**15**) and the magazine support means are both guided by both columns, grapple claw means (**17**) including an angular double claw operatively arranged on said horizontal spindle means (**15**) for swinging a tool into said spindle axis (**18**), drive means (**16, 23, 24**) operatively connected to said horizontal spindle means and to said magazine support means for moving said spindle means (**15**) and said tool magazine means (**22**) in unison, and wherein the tools are supplied to said spindle means through said spacing.

4,363,167

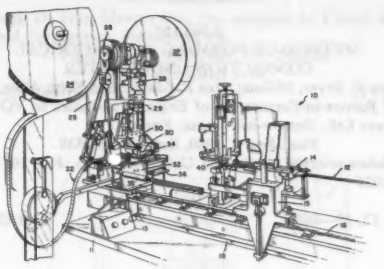
METHOD OF TERMINATING LEADING ENDS OF A PLURALITY OF WIRES

Andrew G. Boutcher, Jr., and Kenneth F. Folk, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 11, 1980, Ser. No. 176,812

Int. Cl.³ H01R *43/04*; B23P *19/00*

U.S. Cl. 29—863 **11 Claims**



1. Apparatus for terminating the leading ends of a plurality of wires to a like plurality of terminals comprises:

an operating zone having a terminating station therein;

a wire delivery shuttle which is reciprocable on a first path from said operating zone to a point remote therefrom, said shuttle having a leading end closest to said operating zone,

said shuttle having a like plurality of elongated wire guide tubes in a planar parallel array, said guide tubes having a first fixed spacing, each guide tube having two telescoping parts, the innermost part extending to the leading end of the shuttle, each guide tube closely accommodating a single wire, said shuttle having releaseable wire gripping means effective to hold the wires stationary with respect to the outermost of the telescoping parts, whereby,

said shuttle may reciprocate on said path toward and away from said operating zone and deliver said leading ends of said wires to said operating zone in a planar array at said first fixed spacing, said leading ends being extruded from the guide tubes into the operating zone for termination by stopping the leading end of the shuttle at the operating zone and collapsing the telescoping parts by continued movement of the shuttle while the wire gripping means hold the wires stationary with respect to the outermost of the telescoping parts.

8. A method of terminating the ends of a plurality of wires to a like plurality of terminals having a second fixed spacing in a linear array and inserting the terminated ends into a like plurality of cavities having a first fixed spacing in a linear array in a connector housing comprises the steps of:

gripping said wires in a planar parallel array at said first fixed spacing at portions thereof remote from said ends and delivering said ends to a terminating station, said wires being gripped so that the ends are in a rectilinear array when the wires are parallel between said gripped portions and said ends.

deflecting said wires transversely of the planar array at a point between said terminating station and said gripped portions, the innermost wires being deflected more than the outermost wires, said ends thereby being modified to an arcuate array when the wires are parallel between said gripped portions and said ends,

spreading said ends to a second fixed spacing in a planar guide template having grooves therein, said grooves having first portions at said first fixed spacing remote from said terminating station and second portions at said second fixed spacing adjacent to said terminating station, said second spacing being sufficient to align ends to a rectilinear array when the wires are spread into the grooves, said wires being spread into the grooves by a wiper assembly

which wipes the wires into the grooves from the first portions toward the second portions,

positioning a like plurality of terminals at said second fixed spacing at said terminating station adjacent said ends and terminating said ends to said terminals,

restoring said ends to said first fixed spacing and inserting said ends into cavities in a connector housing at an insertion station, said ends being inserted by relative axial movement between the ends and the housing.

4,363,168

METHOD OF FORMING AN ELECTRICAL CONNECTION UNDERWATER

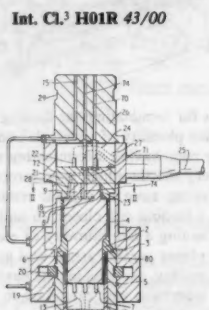
James E. Bryer, Millom; Alan P. Mayes, and Keith Allen, both of Barrow-in-Furness, all of England, assignors to VO Offshore Ltd., Barrow-in-Furness, England

Filed Jun. 9, 1980, Ser. No. 157,538

Claims priority, application United Kingdom, Jun. 16, 1979, 7921020

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—869 **8 Claims**



1. A method of forming an electrical connection underwater between first and second cables, which method comprises:

(a) providing a first connector portion including a first electrical contact connected to the first of the cables;

(b) providing a second connector portion including a second electrical contact connected to the second of the cables;

(c) engaging together the first and second connector portions under water so as to electrically connect the first and second contacts and form a closed free space between the connector portions within which space the first and second contacts are disposed;

(d) flushing out the free space between the connector portions;

(e) drying the free space; and

(f) introducing electrically insulating liquid into said free space.

4,363,169

ELECTRIC SHAVER

Sataro Nasu, Hikone; Hikoyoshi Hara, Shijonawate, and Kouichi Iwanaga, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 3, 1981, Ser. No. 240,074

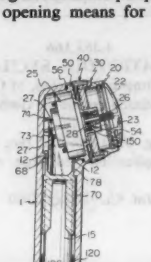
Claims priority, application Japan, Mar. 3, 1980, 55-26857

Int. Cl.³ B26B *19/38*

U.S. Cl. 30—41 **13 Claims**

1. An electric shaver wherein a motor is watertightly housed in an opening at one end of a housing, a shaving blade assembly is mounted to said one end with inner blades operably coupled to a rotary shaft of said motor projected out of the one end through a watertight sealing means, power source batteries are housed within said housing, a switch is provided in the housing so as to open and close a circuit between the motor and said batteries by means of a handle watertightly provided as exposed on the outer periphery of the housing, and a battery covering mounted to the other end opening of the housing for holding the batteries therein includes a watertight sealing means,

said housing having in the inner peripheral wall along said the other end opening means for holding said battery



covering to the housing, and said battery covering being provided with a lock means moved in directions transversing the axial line of the other end opening responsive to mounting operation of the covering to the opening so as to be locked in said holding means and with a seal means moved in said axial directions responsive to said mounting operation for achieving a watertight abutment between the other end opening of the housing and the battery covering over the entire periphery of them.

4,363,170

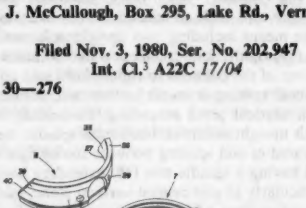
BLADE HOLDER FOR MEAT TRIMMING KNIFE

Timothy J. McCullough, Box 295, Lake Rd., Vermilion, Ohio 44089

Filed Nov. 3, 1980, Ser. No. 202,947

Int. Cl.³ A22C *17/04*

U.S. Cl. 30—276 **4 Claims**



1. A blade holder construction for a meat-cutting tool of the type having a power-driven handle assembly with a concave arcuate surface at one end formed with two tapped holes therein and having a drive gear rotatably supported in the handle assembly for driving a gear toothed ring blade adapted to be rotatably supported by the blade holder construction, said blade holder construction including:

(a) a split annular-shaped ring;

(b) an interior, annular groove formed in the ring for rotatably mounting a complementary-shaped cutting blade therein;

(c) inwardly projecting arcuate flange means formed integrally with the ring;

(d) exterior arcuate groove means formed in the ring for engagement with alignment keys mounted on the concave arcuate surface of the power-driven handle;

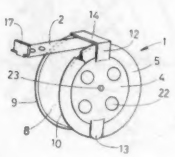
(e) an arcuate-shaped plate formed with a drive gear-receiving recess and a pair of holes, said holes being adapted to align with the tapped holes of the power-driven handle for receiving a pair of screws therethrough for removably attaching the plate on the concave surface of said handle, and said plate having a smooth concave inner surface and a generally smooth convex outer surface; in which said outer surface is formed with an end portion having a larger radius of curvature than an adjacent intermediate portion with said larger end portion providing a contact pressure zone engageable with the arcuate end surface of the handle when the blade holder is attached to said handle; and

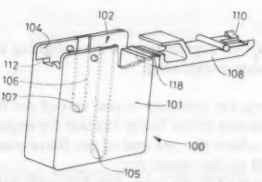
(f) arcuate groove means formed in the plate, said plate groove means being complementary to and removably engaged with the inwardly extending arcuate flange means of the ring to removably mount said ring on the plate.

4,363,171
COILABLE RULE AND REPLACEMENT CARTRIDGE THEREFOR

Louis Scandella, Marnay, France, assignor to Stanley Mabo, S.A., Besancon, France

Filed Nov. 24, 1980, Ser. No. 209,882
Claims priority, application France, Nov. 23, 1979, 79 28905; Apr. 29, 1980, 80 09585
Int. Cl.³ B65H *75/48;* G01B *3/10*
U.S. Cl. 33—138 **20 Claims**



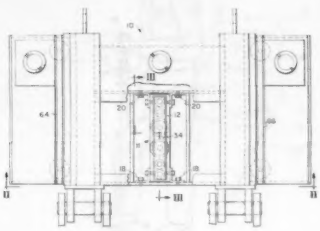


1. A coilable-rule linear measuring instrument with a coiled return spring, comprising a cartridge detachably mounted in a casing provided with a tape outlet slot, said cartridge having mounted therein a tape provided with a hook at its outer end, said cartridge having a central post having one end rigid with a lateral flange and a spool having a lateral flange formed with a central aperture and adapted to pivot about said central post, said spool further having a peripheral wall provided with generally annular side flanges between which the measuring tape is wound on said outer peripheral wall; a tape return spring mounted in an annular chamber defined by said central post and said peripheral wall, said peripheral wall having an aperture through which said spring is connected to said tape, said cartridge including an element for retaining the free end of said tape on said spool, whereby said cartridge constitutes a compact unit, said retaining element being formed integrally with said lateral flange rigid with said central post, the end of said central post which is opposite said lateral flange projecting externally from the lateral flange of said spool, said central post lateral flange being provided with at least one radial holding lug, said cartridge being slidably fitted in said casing, said casing including a one-piece case having a groove formed in one of its main sidewalls, said groove extending at a right angle to the open side of said casing and being adapted to be engaged by said central post and to constitute a recess engageable thereby, the opposite main sidewall being provided with a hollow portion engaged by said at least one radial lug for positioning and holding against movement said lateral flange rigid with said central post in said casing, said casing further including a cover for closing said case.

4,363,172
APPARATUS FOR MEASURING ECCENTRICITY OF ROLLS

Kenneth D. Ives, Murrysville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 17, 1981, Ser. No. 255,130
Int. Cl.³ G01B *5/14*
U.S. Cl. 33—174 Q **10 Claims**



1. An apparatus for measuring the eccentricity of a circumferential face of an axially rotatable roll, said apparatus comprising:

a housing adapted for transport substantially tangent to the roll face in a direction normal to the roll axis,

said housing including means (a) for guiding said housing during transport so that an axis thereof is maintained coincident with the transport direction and said transport direction is maintained constant at least for sufficient of the portion of said transport for determining eccentricity of the roll, and (b) for contacting said roll and causing rotation thereof at a circumferential speed equal to the rate of housing transport,

an elongated measuring runner projecting laterally from said housing so as to be abutted and traversed by said roll along an outer longitudinal surface thereof, said longitudinal surface being parallel to the direction of housing transport and of length sufficient for measurement of eccentricity of said roll,

means for mounting said measuring runner displaceably in the housing and maintaining said runner parallel to the housing axis in the transport direction, and

means for measuring the displacement distance of said measuring runner from a reference position in the housing.

4,363,173
BOLT HOLE LOCATING AND MARKING TOOL

Joseph B. Caldera, 427 W. 10th, Escondido, Calif. 92026

Filed Oct. 17, 1977, Ser. No. 842,684
Int. Cl.³ B25H *7/04;* B25D *1/00*
U.S. Cl. 33—180 R **1 Claim**

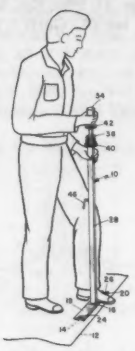
1. A self contained hand actuated inertial impact marking tool for establishing and marking predetermined distances on concrete and the like, comprising:

an elongated generally flat rectangular base member having a support face and an aperture therein intermediate the ends thereof, the length thereof between said aperture and said ends defining means for establishing predetermined distances;

an elongated tubular guide member secured at one end to, and extending upward from said base member in alignment with said aperture;

a hand actuated inertial impact member defined by an elon-

gated bar having a sharp point on the lower end and an elongated, cylindrical grip handle adapted to extend through and be gripped by the hand on the upper end mounted in said tubular guide member on said base member and having said sharp point positioned for extending through said aperture for establishing a mark upon impact engagement with a surface, said bar and said tubular member having sufficient length extending from said base member to extend from said base member at the foot of a workman upward to his waist, to enable a workman in the upright position to grasp the grip handle in his hand and



said elongated bar having sufficient mass to enable hand actuation to mark on a concrete floor at the feet of said workman; and

a coil spring disposed between a pair of opposed annular flanges disposed respectively on the upper end of said tubular member and adjacent said handle on said elongated bar for normally supporting said impact member so that said point does not protrude beyond said support face,

a semi-circular cut out at each end of said base member for receiving a bolt, and

clamping means for clamping said elongated bar to said tubular member.

4,363,174

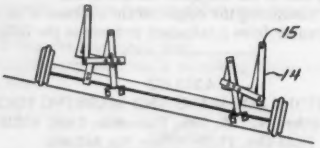
GRAVITY ACTUATED GUIDING DEVICE FOR FARM MACHINES

Ralph H. Curtis, P.O. Box 132, Princeton, Iowa 52768

Filed Aug. 11, 1980, Ser. No. 176,994

Int. Cl.³ B62D *15/02*

U.S. Cl. 33—264 **7 Claims**



7. A gravity actuated apparatus for providing a visual guide to an operation of a traction vehicle pulling a cultivator for a row crop, comprising:

a. a frame adapted to be mounted to the front of a vehicle and defining first and second pivotal connections spaced laterally from each other in a plane transverse of the direction of travel of said vehicle;

b. a weighted pendulum member suspended downwardly from said first pivotal connection of said frame for movement relative to said frame to be maintained by gravity in a generally vertical position as the slope of the terrain on which the tractor rides varies;

c. gauge means extending below said pendulum member; and

d. a mechanism for locating said gauge means at a predetermined spacing relative to the crop, and being linked to said pendulum member to respond to the movement of said pendulum member as the slope of the terrain varies, said mechanism, gauge means, and weighted pendulum member being so linked to each other that the arc of movement of the gauge means is increased relative to the arc of movement of the pendulum member for increasing the displacement of said gauge means beyond the vertical and in the direction of sloping terrain to compensate for the tendency of the rear of the vehicle to slide downhill with increasing slope, whereby said gauge means indicates the transverse position of the cultivator relative to the crop.

4,363,175

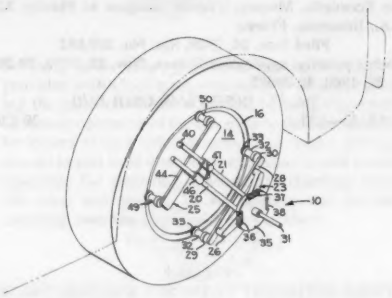
TRUCK WHEEL CLAMP

Richard N. Hedahl, Bismarck, N. Dak., assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,341

Int. Cl.³ G01B *5/255, 11/275*

U.S. Cl. 33—288 **4 Claims**



1. A clamp for supporting a wheel aligning tool on a wheel rim, said clamp comprising:

a frame;

a lower bracket attached to one end of the frame;

means attached to the lower bracket for engaging the wheel rim by which the one end of the frame can be removably attached to the wheel rim;

a shaft attached to the lower bracket, said shaft being configured to support the wheel aligning tool rotatably thereon;

means attached in fixed relationship with said frame for indicating a plurality of predetermined angular positions of said frame,

an upper bracket slidably mounted at the opposite end of the frame, the distance between the upper and lower brackets being adjustable to correspond to the diameter of the wheel rim; and

means mounted on the upper bracket for engaging the wheel rim by which the opposite end of the frame can be removably attached to the wheel rim.

4. A wheel clamp system for simultaneously supporting a first wheel aligning tool from a first vehicle wheel rim and a second wheel aligning tool from a second vehicle wheel rim, said first and second wheel rims being transversely opposite one another with respect to the vehicle axis, said wheel clamp system comprising:

a first wheel clamp including a first bracket affixed to one end of said clamp, said first bracket carrying means to engage said first wheel rim, a first aligning tool support shaft on said first bracket configured to accept the first aligning tool for rotation thereon whereby said first shaft is situated on said wheel clamp at a location closer to the perimeter of the wheel rim than to the rotational axis of the wheel rim, and a first level indicator attached to said

first bracket at a predetermined orientation with respect to the wheel clamp, whereby the wheel and clamp may be rotated to a predetermined angle with respect to horizontal as indicated by said level indicator so that the wheel aligning tool is supported on said first support shaft at a particular elevation and attitude below the axis of the wheel; and

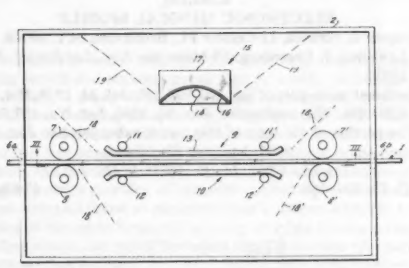
a second wheel clamp including a second bracket affixed to one end of said clamp, said second bracket carrying means to engage said second wheel rim, a second aligning tool support shaft on said second bracket configured to accept the second aligning tool for rotation thereon whereby said second shaft is situated on said second wheel clamp at a location closer to the perimeter of the wheel rim than to the rotational axis of the wheel rim, and a second level indicator attached to said second bracket with an orientation opposite to that of the first level indicator on the first wheel clamp, whereby the second wheel aligning tool will be supported on said second support shaft at the same elevation and attitude as the first wheel aligning tool when the second wheel and clamp are rotated to the angle determined by the second level indicator.

4,363,176

ANTIBUCKLING APPARATUS FOR LITHOGRAPHIC PRINTING PLATES

Paul Jargiello, Orange, N.J., and William Bosshardt, Armonk, N.Y., assignors to Polychrome Corporation, N.Y.

Filed Apr. 10, 1981, Ser. No. 252,739
Int. Cl.³ F26B *23/04, 3/30*
U.S. Cl. 34—4 **19 Claims**



1. A UV curing apparatus for post-curing lithographic plates, or the like, the apparatus comprising:

a UV radiation source; means for moving a lithographic plate, or the like, the plate having two opposite surfaces and at least one of the surfaces should be exposed to UV radiation, with the plate moving along predetermined path, with the plate moving beneath and with one of the surfaces of the plate being spaced from the radiation source as the plate moves past the radiation source;

antibuckling means for preventing buckling of the plate due to radiation from the radiation source impinging on the one surface of the plate, the antibuckling means comprising:

lower antibuckling means spaced from the surface of the plate away from the radiation source for being engaged by that surface of the plate to prevent buckling of the plate;

upper antibuckling means disposed between the radiation source and the one surface of the plate and being spaced from the one surface of the plate for being engaged by that surface of the plate to prevent buckling of the plate; the upper antibuckling means comprising:

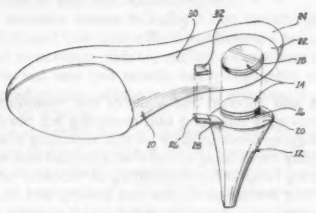
a support; a plurality of antibuckling bars supported by the support and normally spaced above the one surface of the plate, and the antibuckling bars being supported by the support at an orientation generally along the path of the plate and obliquely inclined across and with respect to the path of the plate, whereby radiation is not blocked by the antibuckling bars from impinging upon any line along the path of the plate on the one surface of the plate, and the support being shaped and positioned so as to generally avoid blocking radiation from the radiation source from irradiating the one surface of the plate past the antibuckling bars.

4,363,177

STYLE CONVERTIBLE FOOTWEAR

Leslie A. Boros, 7074 E. Aster Dr., Scottsdale, Ariz. 85254

Filed Jun. 2, 1980, Ser. No. 155,408
Int. Cl.³ A43B *3/24, 3/12, 21/36*
U.S. Cl. 36—101 **24 Claims**



1. Convertible footwear, said footwear comprising in combination:

(a) a sole;

(b) a replaceable heel;

(c) means for detachably attaching said heel to said sole, said attaching means comprising a threaded stud extending from the upper end of said heel and a threaded cavity disposed in said sole for receiving said stud, each said stud and said cavity including single turn threads for effecting attachment therebetween;

(d) means for locking said heel to said sole upon attachment to prevent inadvertent detachment of said heel, said locking means comprising a male detent and a female detent engageable with one another upon threaded engagement between said stud and said cavity, said male detent engaging said female detent upon one turn engagement of said stud with said cavity;

(e) a replaceable upper having opposed extremities;

(f) a channel disposed in each of the opposed sidewalls of said sole; and

(g) means for releasably engaging one of the extremities of said upper with each of said channels.

4,363,178

TRENCHER TOOTH QUICK ATTACHMENT

Terry D. Erickson, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 11, 1981, Ser. No. 272,812
Int. Cl.³ E02F *3/14*
U.S. Cl. 37—191 A **6 Claims**

1. A support assembly for digging teeth comprising:

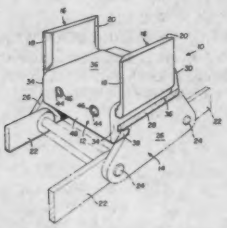
a bracket support having a top wall and an up-turned vertical projection formed at one end;

a digging tooth mounting bracket having a body portion, opposed side walls, opposed end walls, and top and bottom surfaces, said mounting bracket being secured to said top wall of said bracket support, one end of said mounting bracket including a downwardly depending hook-like projection which engages and locks against an end of said bracket support top wall and the opposite end of said mounting bracket abutting against said up-turned vertical projection on said bracket support, and fastening means for securing said opposite end of said mounting bracket against said up-turned vertical projection, and said op-

posed side walls of said mounting bracket including elongated openings into said body portion;

a digging tooth being secured to said mounting bracket, said digging tooth including leading and trailing cutting edges and said digging tooth including a mounting leg portion which extends into one of said elongated openings in one side of said body portion, retaining means mounted between said opposed end walls of said mounting bracket and lockingly engaging said mounting leg portion to fix said digging tooth in place on said mounting bracket; and

said digging tooth being removable from said one side of said mounting bracket for remounting in the other side of said mounting bracket such that said leading and trailing cutting edges are reversed when said digging tooth is mounted to said other side of said mounting bracket.



4,363,179

PROMOTIONAL CAN END

John Ruemer, Jr., Baltimore, Md., and Vinson S. Potts, Cherry Hill, N.J., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Filed Jul. 27, 1981, Ser. No. 286,866
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—307 **6 Claims**

1. In a can end of the type comprising a fixed portion and an openable portion defined by a score line and adapted to be pivotable about a hinge portion by pressure exerted by a tab member pivotable about a hinged section, the improvement which comprises promotional printed matter printed on said end and concealed under said tab until said tab is pivoted so as to open said can.

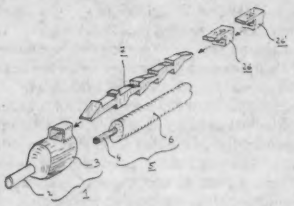
4,363,180

CABLE FERRULE IDENTIFICATION

Gerard Lucas, Croissy sur Seine, and Pierre Hardouin, Asnieres, both of France, assignors to la Telemecanique Electrique, France

Filed Feb. 26, 1981, Ser. No. 238,408
Claims priority, application France, Feb. 29, 1980, 80 04536
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—316 **8 Claims**

1. The assembly of a ferrule for the end of an electric cable having a conductive end portion and a sheath and of removable identification means, said ferrule comprising a tubular conductive portion having an axis of revolution and adapted to receive the said conductive end portion of the cable and a coaxial insulating skirt having a tubular hollow portion which is adapted to cover the said sheath of the cable, the said skirt further having a channel portion located outside the tubular hollow portion and adjacent thereto, said channel portion being substantially parallel to the said axis, and said identification means including an elongated tag having first and second ends and intermediate length portion, said first end being shaped for removable engagement into the said channel to secure the tag along the said sheath, at a distance thereof, in a direction substantially parallel to the said axis, the said intermediate portion forming a plurality of uniformly spaced projections, the cross section of which is decreasing in the direction of the said second end and each comprising an inclined ramp and a transverse abutment surface; said identification means further comprising a plurality of character-bearing rings removably slipped on said tag.

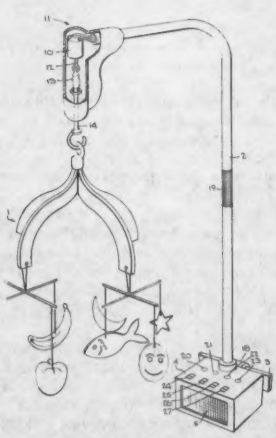


4,363,181

ELECTRONIC MUSICAL MOBILE

Gregory E. Hyman, 12 Chester Pl., Bronxville, N.Y. 10708, and Lawrence J. Greenberg, 64 Mountain Ave., Larchmont, N.Y. 10538

Continuation-in-part of Ser. No. 929,530, Jul. 31, 1978, Pat. No. 4,207,696. This application Jun. 16, 1980, Ser. No. 159,519
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.
Int. Cl.³ G09F *11/00*; A63H *33/26, 13/20*
U.S. Cl. 40—466 **17 Claims**



1. A musical mobile comprising: a rotatable mobile, electric drive means, power transmitting means including energy storage means operatively connecting said mobile to said electric drive means for rotating said mobile in response to release of energy previously stored in said energy storage means and a control circuit means operatively connected to said electric drive means for peroidically activating said electric drive

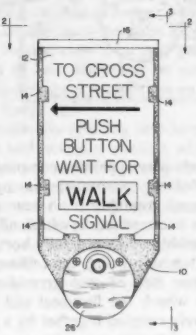
means during the operating cycle of said control means and for simultaneously electronically generating music during said operating cycle, said control circuit means having manual control means for selecting the duration of said operating cycle.

4,363,182

MOUNTING BRACKET FOR PEDESTRIAN CROSSING SWITCH AND SIGN

Clyde C. Berkus, Van Nuys, Calif., assignor to Building Components, Inc., Van Nuys, Calif.

Filed Jun. 8, 1981, Ser. No. 271,417
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **3 Claims**



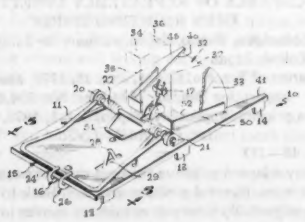
1. A plastic bracket assembly for mounting a pedestrian crossing switch and accompanying sign on a pole, said assembly including: a frame formed of plastic material and having side members defining an open top; a top member removably secured to said frame, said top member having an arcuately-shaped rear side conforming with the arcuate shape of the pole on which the bracket assembly is mounted; a sign enclosing said open front; a plurality of inwardly extending tabs formed integral with said frame at predetermined locations adjacent to the sides of the open front and said top member having a rim extending across the top of said open front, both said tabs and said rim serving to retain the sign in the frame; a strip member integral with the frame and extending across the frame, said strip member having holes therein for receiving screws for mounting the bracket assembly on the pole; and a switch housing mounted on said frame adjacent to said open front.

4,363,183

ANIMAL TRAP

Frank J. Drdlik, 3634 San Jose La., Santa Barbara, Calif. 93105

Filed Oct. 27, 1980, Ser. No. 201,132
Int. Cl.³ A01M *23/30*
U.S. Cl. 43—81.5 **5 Claims**



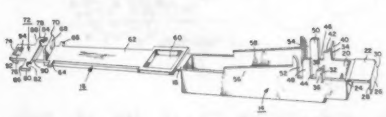
1. An animal trap comprising:
a base having a sizable V-shaped cut-out portion defined by opposing base edges converging from a rear edge to terminate at a mid-section area between opposite ends of said base;
a jaw pivotally carried on said base adapted to pivot about said mid-section;
resilient means operably coupling said jaw to said base wherein said jaw is normally biased to pivot across said V-shaped cut-out;
a bait actuator means movably carried on said base at its mid-section immediately adjacent to the termination of said converging opposing base edges and being operably coupled to said jaw to yieldably restrain said jaw from pivoting;
a safety latch movably carried on said jaw to hold said jaw against the bias of said resilient means independent of and in addition to said bait actuator means;
said bait actuator means includes a bait treadle pivotably carried on said base mid-section and having a bait carrying end and an actuator slidably carried on said base between said jaw and said bait treadle being engagable with said jaw and adapted to release said jaw in response to pivoting of said bait treadle;
a cage-like structure fixedly carried on said base partially enclosing said bait treadle in spaced apart relationship and serving as a guide along with said opposing base edges to direct an approaching animal into a predetermined orientation occupying said V-shaped cut-out portion whereby said jaw when released will strike a vital area of the animal.

4,363,184

DISPOSABLE RODENT TRAP

Gene A. Marcolina, Wyndmoor, Pa., assignor to Gordon D. Holl, North Wales, Pa., a part interest

Filed Aug. 18, 1980, Ser. No. 178,962
Int. Cl.³ A01M *23/00*
U.S. Cl. 43—85 **3 Claims**



1. A portable, disposable rodent trap comprising:
means providing a housing having an internal, elongated tunnel-like passageway defined by a plurality of elongated walls each having long sides and narrow ends, the long sides extending in the direction of the length of the passageway said passageway having an entrance opening through which a rodent can enter the passageway;
means, secured within the passageway, for strangling the rodent; and
means, triggerable by the rodent, for activating said strangling means;
said strangling means being located at a distance from said entrance opening such that substantially the entire body of the rodent is located within the passageway when the strangling means is activated and in contact with the neck of the rodent;
in which one of the elongated walls defining the passageway is a movable wall connected to the other parts of the housing by a hinge;
the strangling means comprises a blade having an edge extending in a direction transverse to the direction of elongation of the passageway, and means opposed to the edge of the blade, said blade and opposed means being relatively movable toward each other whereby the neck of the rodent can be compressed between the blade edge and the opposed means;
one of said blade and said opposed means constitutes part of

said movable wall and is located at an location along the length of said movable wall and spaced from the narrow ends thereof, and the other constitutes part of another wall of said passageway;

and including means connected to said triggerable means for urging the movable wall in a direction such that the edge of the blade means and the opposed means approach each other, and releasable detent means for holding the movable wall in a first position such that the rodent can move its head between the blade edge of the opposed means;

and in which said triggerable means comprises means actuable by the rodent, when its neck is located between the blade edge and the opposed means, for releasing the detent means, whereby the urging means causes the blade edge and the opposed means to approach each other compressing the rodent's neck and choking the rodent to death.

4,363,185

VEHICLE WITH GEAR-CHANGING MECHANISM INCLUDING TWO DISPLACEABLE GEARS

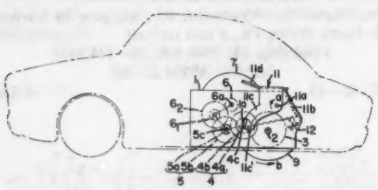
Hiroshi Masubuchi, Utsunomiya, Japan, assignor to Tonka Corporation, Minneapolis, Minn.

Division of Ser. No. 942,428, Sep. 14, 1978. This application Dec. 19, 1980, Ser. No. 218,296

Claims priority, application Japan, Oct. 14, 1977, 52-138565[U]

Int. Cl.³ A63H *17/00, 29/20*

U.S. Cl. 46—209 **10 Claims**



1. A toy vehicle comprising a body supported on a plurality of wheels, said body including a power source, said power source comprising a flywheel secured on an axle; gear means interconnecting said flywheel to said toy vehicle wheels, said gear means including gears engageable in a first gear path to interconnect said flywheel to said wheels when said vehicle is moved in one direction and gears engageable in a second gear path to interconnect said flywheel to said wheels when said flywheel drives said wheels; said gear means including shifting means for changing said gear means from one path to the other path, said shifting means including a radially displaceable idler gear, said idler gear being shiftable from a position of nonengagement in said first gear path to a position of engagement in said first gear path, said idler gear being radially displaceable from a position of engagement in said first gear path to a position of non-engagement in said first gear path, said idler gear being radially displaceable from a position of non-engagement in said second gear path to a position of engagement in said second gear path and said idler gear being radially displaceable from a position of engagement in said second gear path to a position of non-engagement in said second gear path, said shifting means further including a second radially displaceable idler gear, said first idler gear being rotatable independent of said second idler gear when engaged in said second gear path, and said second idler gear being engageable in said first gear path by the driving action of said first-mentioned idler gear when said first idler gear is being driven by said wheels.

4,363,186

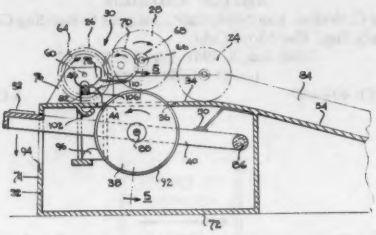
TOY MOTORCYCLE AND LAUNCHER

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 12, 1981, Ser. No. 233,825

Int. Cl.³ A63H *29/20*

U.S. Cl. 46—209 **44 Claims**



1. Toy motorcycle play apparatus comprising:

(a) a two-wheeled toy motorcycle having a frame and a generally aligned rotatable front rear ground-engaging wheels and an intermediate flywheel, all mounted on the frame and rotatable about generally horizontal transverse axes; said motorcycle being non-selfstanding in the stationary position; one of said ground-engaging wheels being a drive wheel; the flywheel and the drive wheel being operatively coupled together by a gear train which reduces the speed and increases the power and duration of rotation at the drive wheel; the flywheel, gear train and the drive wheel comprising an energy-storing drive-train mechanism; the toy motorcycle, when in operation, being powered and gyroscopically balanced by the flywheel; said frame having engagement means thereon; and

(b) a launcher having a platform and control means for releasibly supporting and holding the motorcycle on the platform in an upright forwardly aligned position with its drive wheel out of engagement with the platform so that the drive wheel can rotate freely; for imparting rotation to the flywheel; and for releasing the motorcycle and allowing the rotating drive wheel to engage the platform to propel the motorcycle forwardly said control means including generally vertically movable engagement means on the launcher for movement to an upper position where it releasibly engages said motorcycle engagement means to elevate the drive wheel above the platform, to support the motorcycle in said upright position and to restrain forward movement of the motorcycle while rotation is being imparted to the flywheel, and for movement to a lower position where it disengages from said motorcycle engagement means to lower the drive wheel and release the motorcycle.

4,363,187

TOY CAPABLE OF REPEATEDLY UPSETTING AND THEN RIGHTING ITSELF

Masao Shinohara, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Continuation of Ser. No. 52,631, Jun. 28, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,617

Claims priority, application Japan, Jul. 1, 1978, 53-91565

Int. Cl.³ A63H *17/26*

U.S. Cl. 46—211 **9 Claims**

1. A toy adapted to move from an upright position through at least a semi-inverted position and then back to said upright position at periodic intervals as said toy moves in a forwardly direction along a supporting surface which comprises:

a body having a front, rear, top, bottom and sides, said body being shaped so as to include a pivot surface located

adjacent to said bottom of said body and so as to include a curved exterior surface extending generally along at least a part of the top of said body;

wheel means attached to said body for supporting said body in said upright position on said supporting surface;

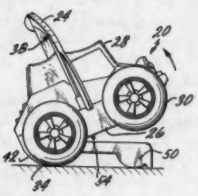
motor means mounted on said body;

means for transmitting mechanical power from said motor means to said wheel means so as to move said toy in said forward direction when said toy is in said upright position, said means for transmitting mechanical power being connected to said wheel means and to said motor means;

a lever means for pivoting said body from said upright position about said pivot surface until such time as the weight of said body causes said body to roll on said curved surface, said lever means being pivotally mounted on said body and being capable of being pivoted along the longitudinal axis of said body between a retracted position in which said lever means is located generally adjacent to said bottom of said body and an extended position in which said lever means extends outwardly from said bottom of said body;

means for periodically pivoting said lever means from said retracted to said extended position and then back to said retracted position as said motor means is operated, said means for periodically pivoting said lever means being connected to and driven by said motor means and being connected to said lever means;

said pivot and said curved surfaces and said lever means being proportioned so that as said lever means is moved from said retracted position to said extended position, said



body will be moved so that said pivot surface contacts said supporting surface and will be pivoted about said pivot surface until such time as the instability of said body causes said body to roll on said curved surface back to said upright position;

said body and said wheels being proportioned so that said toy will automatically roll on said curved surface back to said upright position after said lever means has been extended from said body so as to pivot such body about said pivot surface;

said means for periodically pivoting said lever means being capable of automatically returning said lever means to said retracted position during the time that said toy is rotating about said curved surface;

said motor means comprises a motor having a rotating output shaft;

said means for activating includes a clutch means mounted on said shaft and a linking means operatively connected to said clutch means, said linking means in combination with said clutch means activating said means for levering in response to movement of said shaft;

said clutch means includes a disc member fixedly mounted to said shaft and having at least one ratchet tooth located on said disc member;

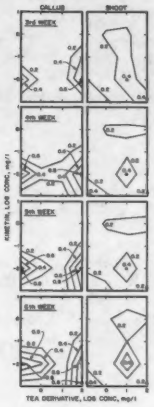
said linking means including a sliding member slidably mounted in said body, said sliding member including at least one ratchet engaging means capable of operably interacting with said ratchet tooth such that said sliding member slides when said ratchet tooth engages said ratchet engaging means.

4,363,188

ENHANCEMENT OF IN VITRO GUAYULE PROPAGATION

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Minoo N. Dastoor, San Marino, Calif.; Wayne W. Schubert, Los Angeles, Calif., and Gene R. Petersen, Pasadena, Calif.

Filed Jun. 30, 1981, Ser. No. 280,153
Int. Cl.³ A01N 9/12; A01G 1/00
U.S. Cl. 47—58 **9 Claims**



1. A method of stimulating the in vitro propagation of polyisoprene containing plants from a nutrient medium containing polyisoprene containing plant tissue comprising the step of:

adding to said nutrient medium an amount effective to stimulate propagation of said polyisoprene containing plant of a bioinducing agent of the formula;

$$R_4—\underset{\displaystyle R_5}{\overset{\displaystyle |}{N}}—R_6$$

where R_5 and R_6 are selected from phenyl, $—CH_2(CH_2)_qR_7$ where q is an integer from 1 to 6, R_7 is hydrogen; phenyl; an electron withdrawing group; R_9 phenyl—where R_9 is alkyl of 1 to 6 carbon atoms or an electron withdrawing group; $—(CH_2)_pOR_8$ or $—(CH_2)_pS—R_8$ where p is an integer from 2 to 6, R_8 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or phenyl R_9, and R_4 is hydrogen or R_5, and at least one of R_4, R_5 and R_6 has the structure: $—CH_2—(CH_2)_q—R_7$.

4,363,189

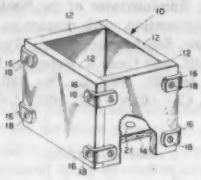
TRANSPLANTABLE PLANTER

John T. O'Donnell, III, 1518 Crestwood Rd., Mayfield Heights, Ohio 44124

Filed Jun. 30, 1980, Ser. No. 164,299
Int. Cl.³ A01G 9/02
U.S. Cl. 47—73 **2 Claims**

1. A planter apparatus comprised of a base member, a plurality of side members arranged in a surrounding relationship to said base member, each of said side members being substantially perpendicular to said base member, means for supporting said base member attached to all but one said side member, and means for attaching adjacent side members together, said attaching means comprising flexible straps connected to said adjacent side members, said flexible straps being selectively

detachable from said adjacent side members permitting said one side member to be swung outwardly with respect to said



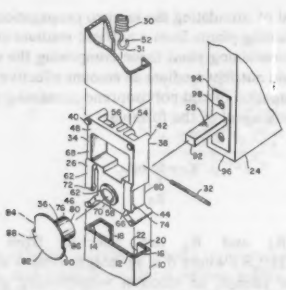
planter apparatus allowing the removal of a plant contained within said apparatus without inversion thereof.

4,363,190

PIVOTED SASH WINDOW SASH GUIDE AND BALANCE LOCK STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Company, Owensboro, Ky.

Filed Jun. 21, 1979, Ser. No. 50,816
Int. Cl.³ E05D *15/22*
U.S. Cl. 49—181 **14 Claims**



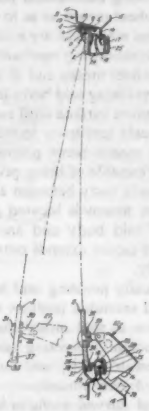
1. Window structure comprising at least one elongated jamb member including a rear wall, side walls and front wall flanges defining a generally rectangular hollow cross section with an elongated slot in the front wall thereof, a pivot shoe positioned within the recess for guided reciprocal movement therein longitudinally of the jamb member, a cylinder cam operably associated with the pivot shoe for expanding the pivot shoe into engagement with both the rear wall and front flanges of the jamb member on relative rotation of the cylinder cam and pivot shoe, said pivot shoe including a generally rectangular body portion having an upper part including means for securing a sash balance thereto and a lower part having a transverse opening therein for receiving the cylinder cam and tab portions extending from one side of the body portion and longitudinally of the jamb member in spaced relation to the bottom part of the body portion of the pivot shoe at the sides of the opening therein terminating in cam parts extending toward the body portion, a sash positioned adjacent the jamb member for pivotal movement relative to the jamb member, and actuating means secured to the window sash and engaged with the cylinder cam for producing rotation of the cylinder cam relative to the pivot shoe on pivoting of the window sash relative to the jamb member.

4,363,191

HINGED WINDOW ASSEMBLY

Cleon C. Morgan, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Filed Apr. 23, 1980, Ser. No. 143,127
Int. Cl.³ E05D *15/00*
U.S. Cl. 49—381 **25 Claims**



1. A hinge for pivoting vehicle windows and the like, comprising:

rigid support means for supporting a vehicle window, said support means having a base adapted for connection with a window frame, and a body extending rigidly from said base and shaped to extend over and protect an exterior portion of said hinge;

flexible connection means for connecting said rigid support means with a pane of glass, said connection means including a first portion adhered to one area of said body of said rigid support means adjacent a free edge thereof to pivotally mount the window pane in the frame, and a second portion disposed over another area of the body of said rigid support means and extending from said first portion to said base to form a flexible seal between said rigid support means and the window; and wherein

said second portion of said connection means is unattached to said other area of said support means body, and can flex away from said other area when the window pane is pivoted to a position beyond a normally fully open window position such that the base of said rigid support means can be attached to the window frame without damaging said seal.

4,363,192

WINDOW MOUNTING SYSTEM

Armand L. Soucy, 337 Maple St., Lynn, Mass. 01904

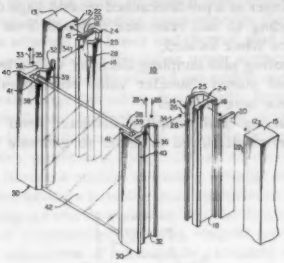
Filed Mar. 30, 1981, Ser. No. 249,008
Int. Cl.³ E05D *15/16*
U.S. Cl. 49—453 **54 Claims**

1. A window mounting system comprising:

a track member having a base for attachment to a window frame, a side wall extending transversely to said base, and a cover extending from said side wall parallel to said base and having a curved shape facing said base, the distal end of said cover being spaced from the base to form an opening; and

a slide member including a runner having a curved shape for nesting in said track member and slidingly engaging therewith, the width of said runner being greater than the

width of said opening between said cover and base of said track member to allow for snap-insertion, a runner extension, and glazing support means fixed to said runner extension.



4,363,193

UNIVERSAL GRINDING MACHINE

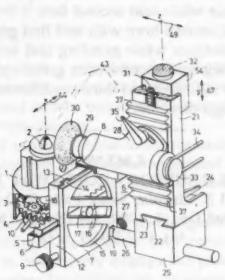
Peter Herzig, Niederönz, Switzerland, assignor to Ewag A.G., Maschinen - und Werkzeugfabrik, Solothurn, Switzerland

Filed Sep. 17, 1980, Ser. No. 188,116

Claims priority, application Switzerland, Sep. 20, 1979, 8479/79

Int. Cl.³ B24B *3/00*; B23C *3/28, 3/36*

U.S. Cl. 51—48 HE **4 Claims**



1. A universal grinding machine comprising:

a workpiece holding means including a workpiece head provided with a rotatable chuck,

a grinding-wheel spindle having a grinding wheel secured thereto,

a vertically displaceable grinding-wheel spindle holder,

guide means associated with said grinding-wheel spindle holder, and

motion-conversion means associated with said grinding-wheel spindle holder and with said chuck, said grinding-wheel spindle holder being disposed for solely vertical displacement along said guide means, and said motion-conversion means being arranged to effect positive conversion of vertical displacement motion of said grinding-wheel spindle holder into rotary motion of said chuck, wherein said motion-conversion means comprise

a planetary gear housed within said workpiece head and including a gear rim,

a rack meshing with said gear rim,

a vertically displaceable sine bar,

a roller secured to said rack and engaging said sine bar,

means for vertical guidance of said sine bar, and

a rod detachably connected at one end to said sine bar and at the other end of said grinding-wheel spindle holder, whereby said vertical displacement motion of said grinding-wheel spindle holder is transmitted to said sine bar.

4,363,194

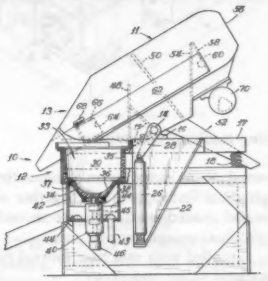
VERTICAL SELF-SEPARATING CENTRIFUGAL FINISHING APPARATUS WITH AUTOMATIC MEDIA RETURN

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed Feb. 26, 1981, Ser. No. 238,443

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—163.1 **20 Claims**



1. A finishing machine for finishing the surface of unfinished parts with finishing media comprising a housing which is rotatable about a substantially horizontal axis, a finishing chamber in said housing for receiving unfinished parts and finishing media and for finishing of parts when said housing is in finishing position, a storage chamber in said housing adapted to receive finishing media from said finishing chamber when said housing is rotated to a parts-separation or ejection position, a foraminous member disposed in said housing for separating finishing media from parts, means for rotating said housing about a substantially horizontal axis from a finishing position to a parts-separation position and return, and means for transfer of finishing media from said storage chamber to said finishing chamber upon return of said housing from said parts-separation position to said finishing position, characterized in that said finishing chamber comprises an annular spinner member constituting a lower portion of said finishing chamber and a tub member upwardly arranged with respect to said spinner member and comprising an upper portion of said finishing chamber, said spinner member being adapted to rotate about a generally vertical axis when said housing is in finishing position, a rotational motion-producing assembly operatively associated with said finishing chamber and comprising rotatable support means for said spinner member adapted to rotate about substantially the same axis as its complementary spinner member when said housing is in finishing position and associated drive means for rotation of said rotatable support means, whereby said spinner member may be rotated with respect to said tub member for carrying out a finishing operation in said finishing chamber, and

vibratory means operatively associated with said foraminous member for vibration of said foraminous member when said housing is in parts-separation position for separation of finishing media from parts, and

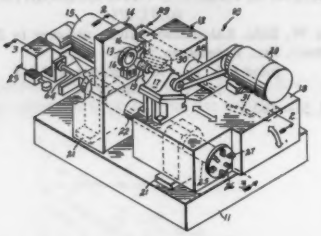
a parts exit associated with said foraminous member for exit of finished parts from said machine when said housing is in parts-separation or ejection position and under the influence of said vibratory means.

4,363,195

INTERNAL GRINDING MACHINE WITH WEDGE FEED MECHANISM

Herbert R. Uhtenwoldt, West Boylston, Mass., assignor to Cincinnati Milacron - Heald Corp., Worcester, Mass.

Filed Dec. 15, 1980, Ser. No. 216,322
Int. Cl.³ B24B 49/00
U.S. Cl. 51—165.77 3 Claims



1. A grinding machine, comprising:
(a) a base;
(b) base journal means including an elongate first support bar and longitudinal first support axis together with a substantially parallel spaced-apart elongate second support bar and longitudinal second support axis;
(c) a table journalled with said base journal means for relative movement along said axes;
(d) a work support carried by one of said base and table;
(e) a wheelhead carried by the other of said base and table; and
(f) ramp feed means, moveable generally along said second support axis, including at least one ramp surface canted to said second support bar to form an oblique angle with said second support axis and affixed to one of said second support bar and base, and further including a ramp surface reaction member affixed to the other of said second support bar and base,
wherein relative movement of said surface and said reaction member generally along said second support axis and parallel to said first support axis causes said second support bar to undergo radial translatory movement relative to said base, thereby effecting pivotal movement of said table about said first support axis.

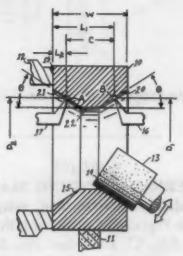
4,363,196

GAGE CONTROLLED GRINDING METHOD

Herbert R. Uhtenwoldt, West Boylston, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Dec. 15, 1980, Ser. No. 216,783
Int. Cl.³ B24B 1/00, 49/04
U.S. Cl. 51—291 1 Claim

1. A method for grinding oppositely disposed tapered end bores in a workpiece, comprising the following steps:
(a) choosing a reference bore diameter and corresponding reference distance from the end face of a theoretical workpiece master;
(b) locating a first end face of said workpiece on a driveplate;
(c) grinding a first tapered bore in said workpiece at the second opposite end face of said workpiece while located on said drive plate;
(d) gaging said first bore with a first gage finger at a first predetermined gage distance from said driveplate corresponding to said reference distance while grinding said first bore;
(e) interrupting said first bore grinding when said first gage finger indicates a first predetermined diameter corresponding to said reference bore diameter at said first gage distance;
(f) turning said workpiece end-for-end and locating said second end face on a drive plate;
(g) sampling the diameter of said first bore with a second gage finger at a predetermined second gage distance corresponding to said reference distance from said second end face while located;
(h) comparing said sampling diameter with a second predetermined stored diameter value corresponding to said reference bore diameter;
(i) subtracting said sampling diameter from said second predetermined stored diameter to generate a difference value;



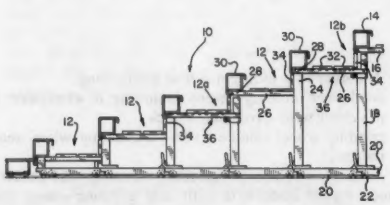
(j) adjusting the value of said first predetermined diameter by adding said difference value to said first predetermined diameter value to generate a third predetermined diameter value;
(k) grinding a second tapered bore in said workpiece at said first end face while said second face is located;
(l) gaging said second bore with said first gage finger at said first gage distance while grinding said second bore;
(m) interrupting said second bore grinding when said first gage finger indicates said third predetermined diameter at said first gage distance.

4,363,197

ADJUSTABLE SUPPORT ROLLAWAY BLEACHER

Dale Aurit, 3101 S. Lincoln, Sioux Falls, S. Dak. 57102

Filed Dec. 4, 1980, Ser. No. 212,830
Int. Cl.³ E04H 3/12
U.S. Cl. 52—9 6 Claims



1. A folding bleacher assembly comprising, in combination, a plurality of individually movable seating units, each seating unit including a pair of support columns, with each column having a wheeled support truck assembly forming the lower portion thereof, and a seat-and-floorboard assembly comprising a plurality of horizontally extending frame elements secured at their inner ends to the upper portions of said support columns, a floor panel assembly resting on the upper surfaces of the intermediate portions of said frame elements, and a seating bench disposed at the outer end of said frame elements and being supported thereby, each of said seat-and-floorboard assemblies further including at least one reinforcing assembly, each of said reinforcing assemblies having a vertically extend-

ing portion fixedly attached to said upper portion of said support columns, said vertically extending portion having a face plate forming a portion of the lower end thereof, said face plate lying in use along the outer surface of said column, said reinforcing element also including a horizontally extending support portion adjacent the lower end thereof, said horizontally extending support portion having an upper surface adapted to engage and support said floorboard assemblies and said bench and a sidewall flange extending downwardly from said upper surface thereof, said horizontally extending element further including, adjacent its inner end, a vertically extending adjustment assembly positioning flange, and an adjustment support mechanism having a portion extending through said positioning flange and having a movably positionable inner end portion adapted to engage said face plate to limit the downward movement of said horizontally extending support portion, and to provide for adjustment of horizontally extending support portion.

4,363,198

ANCHOR SYSTEM

Gordon R. Meyer, Rte. 1, Box 7, Cotulla, Tex. 78014

Filed Sep. 22, 1980, Ser. No. 189,064
Int. Cl.³ B66D *1/04*
U.S. Cl. 52—155 **7 Claims**

1. A portable anchor apparatus for a motor vehicle wench which may be carried and stored on the vehicle, comprising:

first and second anchor members for insertion in the ground in spaced relationship;

said first and second anchor members each having a lower spade portion for insertion in the ground and an upwardly extending, elongated post portion for receiving a slide hammer;

a slide hammer means having an elongated portion for slidably receiving the elongated post portion of the anchor members to operatively engage the post portion of each anchor member for driving the same into the ground upon applying a sliding hammering force thereto and for retaining the slide hammer means on the elongated post portion when the slide hammer means is retainably positioned on an anchor member; and

a cable means secured to the slide hammer means and to the second of the anchor means to interconnect the anchor means when the slide hammer means is positioned in its retaining position on the post portion of the first anchor means.

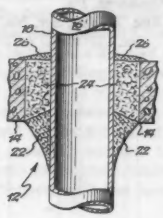
4,363,199

FIRE RESISTANT SEALING SYSTEM FOR HOLES IN FIRE RESISTANT BUILDING PARTITIONS

Chhattar S. Kucheria, and Russell D. Smith, both of Grand Island, N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,826
Int. Cl.³ E04B *5/48*
U.S. Cl. 52—221 **8 Claims**

1. A fire-resistant seal at least partially surrounding a member passing through a fireproof building dividing structure comprising an adhesive fire-resistant molding compound, said molding compound comprising an aluminum trihydrate endothermic material, ceramic fiber and colloidal silica, spanning the opening between said member and said dividing structure at about the plane of at least one surface of said structure and



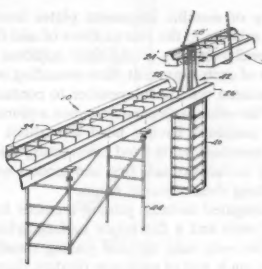
ceramic fiber filling the interstices between said member and said dividing structure.

4,363,200

PRE-CAST BUILDING ELEMENT AND METHOD

Joseph Goldenberg, Hyattsville, Md., assignor to Construction Products Research and Development Corporation, Reno, Nev.

Filed Aug. 19, 1980, Ser. No. 179,563
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—251 **13 Claims**



1. A method of forming a building structure of the type having a plurality of substantially vertical components of cast cementitious material for supporting a horizontal surface of the structure comprising the steps of:

erecting a plurality of forms for the vertical components at selected spaced locations, with the forms including reinforcing means for cementitious material protruding from the top of at least some of the forms,

disposing precast beam means so as to span the space between at least some of the adjacent forms for the vertical components,

adjusting the reinforcing means of the forms for the vertical components to a selected condition to cooperate with additional reinforcing means associated with the precast beam member,

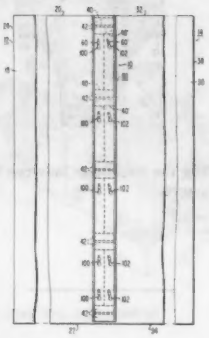
filling the forms for the vertical components with cementitious material to a level sufficient to cover both said reinforcing means at least in the area where said means are adjusted to cooperate, and

after curing of the cementitious material, removing said forms from the cast vertical components.

4,363,201
PANEL JOINTS

Gurdip S. Bains, Bonneauville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 7, 1980, Ser. No. 175,974
Int. Cl.[9] E04C *1/10*
U.S. Cl. 52—584 2 Claims



1. A panel joint for quickly assembling, or disassembling, two upstanding, in-line, non-metallic panel members via a vertical motion which produces only metal-to-metal contact between the joint elements, comprising:

first and second adjoining, upstanding wall panel members having front and rear surfaces, and adjacent edges, with said adjacent edges in contact with one another, and with the front surfaces of the panel members in a common plane,

a plurality of metallic alignment plates fixed in vertically spaced relation to the rear surfaces of said first and second wall panel members, along their adjacent edges, with a portion of each alignment plate extending outwardly from its associated wall panel member to contact the rear surface of the other wall panel member, a plurality of metallic spacer members having head and shank portions, said spacer members being fixed in vertically spaced relation to the rear surfaces of said first and second wall panel members, along their adjacent edges,

and an elongated metallic joining member having first and second ends and a flat major surface which extends between its ends, said metallic joining member being constructed such, and of sufficient rigidity, that said flat major surface lies in a flat plane which resists deformation, said joining member further including first and second columns of spaced elongated slots disposed in a common plane on opposite sides of a longitudinal axis, with the slots in said first column having sides parallel with the longitudinal axis, and with the slots in said second column having sides which are parallel with one another, but inclined relative to the longitudinal axis,

said joining member being in slideable, metal-to-metal contact with said plurality of alignment plates, with the spacer members on said first wall panel member captured by the slots in said first vertical column, and the spacer members on said second wall panel member captured by the slots in said second vertical column,

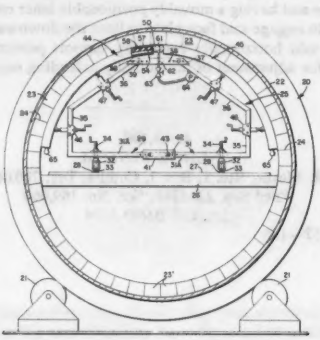
said joining member being in a downwardly displaced frictionally locked position, with said spacer member and elongated slots being configured to force the flat major surface of said metallic joining member tightly against said metallic alignment plates, to force the surfaces which contact the metallic joining member, and the front surfaces of the panel members, into a common plane, and with the inclined slots in the second vertical column forcing the associated spacer members on the second wall panel member towards the first wall panel member to urge the adjoining edges of said first and second wall panel members tightly together,

said joining member being releasable from said locked position by an upward force applied thereto.

4,363,202
APPARATUS FOR LINING KILNS, TUNNELS AND THE LIKE

Eugene B. Kenyon, Rte. 1, Box 34, Star Tannery, Va. 22654

Filed Jun. 16, 1980, Ser. No. 159,635
Int. Cl.[3] E04G *21/22*
U.S. Cl. 52—749 12 Claims



1. Apparatus for lining with brick a kiln, tunnel or like arcuate surface comprising a frame adapted to be mounted within the surface to be lined, means for mounting on said frame at least one arcuate member adapted to extend in spaced relation to the surface to be lined and adapted to locate and support a column of brick substantially in the space between said member and said surface, said arcuate member being supported on the frame and comprising a continuous base member which is longitudinally deformable so that it may be adjusted to fit the contour of the surface to be lined, an elongated tubular expansible member extending in overlying relation along said base, and a relatively solid flexible member loosely overlying said expansible member, said flexible member being in the form of a length of solid rubber or rubber-like material, whereby said apparatus is adaptable for any of various irregularities of the brick or the surface to be lined.

4,363,203
LIQUID FILL APPARATUS

Steven Marshall, Glen Waverley, and Vincent Papaluca, Camberwell, both of Australia, assignors to ACI Operations Pty. Ltd., Melbourne, Australia

Filed Aug. 19, 1980, Ser. No. 179,466
Claims priority, application Australia, Aug. 20, 1979, PE0093
Int. Cl.[3] B65B *31/06;* B67B *1/00;* B65B *7/28*
U.S. Cl. 53—109 6 Claims

1. Apparatus for liquid filling flexible, collapsible containers, said containers having a pouring spout and a closure for said spout, said apparatus comprising:

a left holding means and a right holding means each for holding a separate spout during the steps of closure removal, filling of the container with liquid, and closure replacement on said spout;

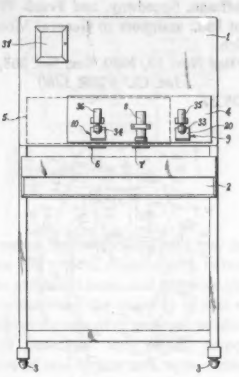
a left closure removal means and a right closure removal means each for gripping and removing said closures and for replacing same;

a fill head having nozzle means for passing liquid into said container through said spout; and

frame means having said fill head mounted thereon between said left closure removal means and said right closure

removal means, said frame means being moveable between (i) a left position where said fill head is adjacent said left holding means and said right closure removal means is adjacent said right holding means and (ii) a right position where said fill head is adjacent said right holding means and said left closure removal means is adjacent said left holding means;

said apparatus being arranged for a sequence of operations where (i) with said frame in its right position said fill head cooperates with a spout held in said right holding means to fill the associated container with liquid, whilst said left closure removal means replaces a closure on a spout held in said left holding means, said left holding means releases said spout, a further container is moved into position



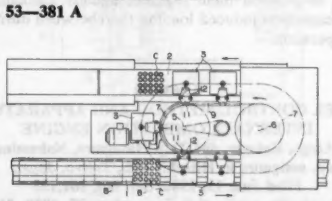
adjacent said left holding means, the spout of which is gripped thereby, and said left closure removal means removes the closure therefrom and (ii) said frame is moved to its left position where said fill head cooperates with the spout held in said left holding means to fill the associated container with liquid, whilst said right closure removal means replaces a closure on the spout held in said right holding means, said right holding means releases said spout, a further container is moved into position adjacent said right holding means the spout of which is gripped thereby and said right closure removal means removes the closure therefrom, and so on, wherein a container held in the left holding means is filled by the same fill head nozzle means as a container held in the right holding means.

4,363,204

APPARATUS FOR SIMULTANEOUS OPERATION OF UNCASING AND CAP REMOVING

Masao Ohude, Kanazawa, and Duro Kawamura, Uchinada, both of Japan, assignors to Shibuya Kogyo Co., Ltd., Ishikawa, Japan

Filed Aug. 6, 1980, Ser. No. 175,748
Claims priority, application Japan, Aug. 13, 1979, 54-102947
Int. Cl.³ B67B *7/16*
U.S. Cl. 53—381 A **8 Claims**



1. An apparatus for uncasing and uncapping bottles, comprising:

(a) a movable holding head unit including a bottom plate provided with a plurality of bottle grippers and a top plate fixedly connected to said bottom plate, wherein each of said bottle grippers includes cylinder means and elastic member means provided on the inner surface of said cylinder means and the bottom end of each of said cylinder means is engageable with a part of a bottle stored in a box when said unit is located at a lowered position;

(b) means for moving said holding means unit between a first position where a plurality of bottles, some of which may have caps thereon, are contained in a box and a second position where said bottles are placed with the caps removed and in an uncased condition;

(c) means for vertically moving said holding head unit while said unit moves between said first and second positions; and

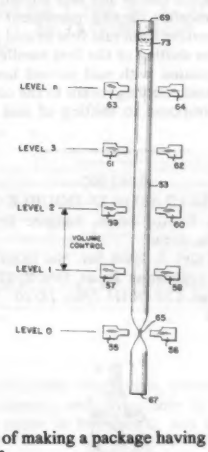
(d) means, attached to said holding head unit, for removing caps from the bottles while being transferred from the first position to the second position, said means for removing caps including an intermediate plate interposed between said top and bottom plates, said intermediate plate being movable with respect to said top and bottom plates in order to carry out a cap removing operation and provided with cap removers corresponding in position to respective said bottle grippers.

4,363,205

PACKAGING METHOD

Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, Essington, Pa.

Filed Nov. 8, 1976, Ser. No. 739,475
Int. Cl.³ B65B *3/16, 3/18, 31/06, 51/22*
U.S. Cl. 53—434 **6 Claims**



1. A method of making a package having contents, comprising the steps of

taking a tube of flexible material having a top and a bottom end,

ultrasonically sealing a bottom band seal across the tube,

inserting the contents into the tube,

and ultrasonically sealing an upper band seal across the tube at a location spaced away from the bottom end of the tube,

with the contents contained between the upper and bottom band seals,

the contents-inserting step comprising

inserting tablets or the like into the tube,

and said method including the further steps of folding the tube across itself between tablets to form fold lines in the tube,

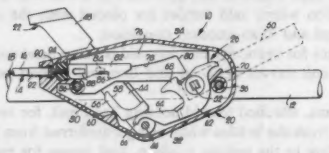
and ultrasonically sealing said fold lines to form compartments for a series of tablets.

4,363,206

METHOD AND APPARATUS FOR CONTROLLING BLADE CLUTCH ASSEMBLY

Larry D. Schmitt, Newton, Kans., assignor to Conchemco Incorporated, Lenexa, Kans.

Filed Apr. 23, 1981, Ser. No. 256,902
Int. Cl.³ A01D 50/02
U.S. Cl. 56—11.3 8 Claims



1. A power lawnmower control apparatus for connection to a disengageable clutch coupling the lawnmower motor and blade, said apparatus comprising:

first shiftable handle means;

second shiftable handle means;

cable means for operative connection to said clutch including a first end portion adapted for connection to said clutch and a second end portion having structure for selective coupling and decoupling of the second end portion to said first handle means, said end portions shiftable between first and second positions respectively corresponding to the disengaged and engaged positions of said clutch; and

operating mechanism, including

coupling means selectively shiftable to a position coupling said first handle means and said second cable end portion for thereafter causing movement of said second cable end portion from said first to said second position thereof upon shifting of the first handle means; and

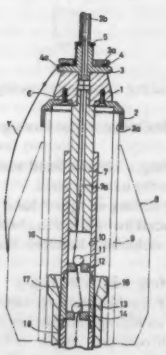
structure associated with said second handle means for shifting of said coupling means to the coupling position thereof in response to shifting of said second handle means.

4,363,207

TENSION REGULATOR IN DOUBLE TWISTER

Mitsuo Fukunaga, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Oct. 2, 1980, Ser. No. 193,031
Claims priority, application Japan, Oct. 3, 1979, 137787/79
Int. Cl.³ D01H 7/86, 13/10
U.S. Cl. 57—58.86 4 Claims



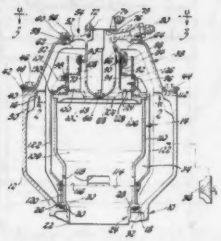
1. A double twister including a tension regulator and a spindle, a stationary disk disposed above the spindle adapted to receive a cop placed at the center of the stationary disk, a guide tube with a yarn passage at the center thereof extending axially of and within the stationary disk, said tension regulator comprising a tenser body having a multi-staged cylindrical shape and a yarn guide hole communicating with the yarn passage of the guide tube adapted to be mounted on the top end of a cop placed at the center of a stationary disk disposed above the spindle, and ring tensers freely fitted on the respective stages of the tenser body with clearances allowing passage of yarn between the ring tensers and the tenser body.

4,363,208

CERAMIC COMBUSTOR MOUNTING

Melvin G. Hoffman, Speedway, and Frank W. Janneck, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1980, Ser. No. 205,417
Int. Cl.³ F23R 3/60
U.S. Cl. 60—39.32 4 Claims



1. In a gas turbine engine having a spool with an air compressor and a turbine for driving said compressor and a metal engine block for enclosing the spool the improvement comprising: a combustor wall portion of the metal engine block forming an inlet air plenum for supplying air to a combustor and adapted to be fluidly connected to the air compressor, said combustor wall portion including an annular resilient seal thereon, a ceramic combustor outlet transition tube having a thermal expansion coefficient less than that of the metal engine block and extending through said annular resilient seal and having a bearing flange thereon supportingly received by the resilient seal, a ceramic combustor liner supported on said transition tube in axial alignment therewith and including an upper open end, a ceramic bypass plate having a coefficient of expansion corresponding to that of said transition tube and said combustor liner and vertically supported on said upper open end to define a high temperature reaction chamber within said ceramic combustor liner, and means including a plurality of equidistantly spaced spring supports located externally of the metal engine block to be cooled by ambient air and operative to position and seal the ceramic combustor liner to the outlet transition tube and the ceramic bypass plate to the upper open end and to position them together against mechanical and thermal expansion induced loading therebetween during combustor operation.

4,363,209

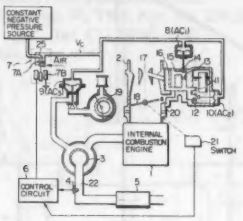
AIR-FUEL CONTROL METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takeshi Atago, Katsuta, and Taiji Hasegawa, Nakaminato, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1980, Ser. No. 161,153
Claims priority, application Japan, Jun. 27, 1979, 54-80159
Int. Cl.³ F01N 3/22; F02B 75/10; F02M 7/24
U.S. Cl. 60—274 8 Claims

1. An air-fuel ratio control apparatus for an internal combustion engine comprising: a carburetor including a low speed fuel

system and a main fuel system and serving for controlling the air-fuel ration of a fuel-air mixture supplied to said internal combustion engine; a thermal reactor in which exhaust gas from said internal combustion engine is reacted with secondary air supplied to said reactor; a three-way catalyst tube connected to said thermal reactor; an exhaust gas composition sensor disposed in an exhaust passage between said thermal reactor and said three-way catalyst tube; a control circuit for producing a control signal in response to the output signal from said sensor; a negative pressure generator for producing a negative pressure in response to said output signal from said



control circuit; means for controlling said low speed fuel system and said main fuel system, respectively, in response to said negative pressure produced from said negative pressure generator; means for controlling the quantity of said secondary air supply in response to the negative pressure produced from said negative pressure generator: and means, responsive to the speed of operation of said engine and, upon detecting that the engine is operating in a high speed of operation region, for generating an output signal which is applied to said control circuit and causes said control circuit to control said negative pressure generator so as to reduce the quantity of said secondary air supply.

4,363,210

EXHAUST GAS PURIFYING SYSTEM FOR INTERNAL COMBUSTION ENGINES

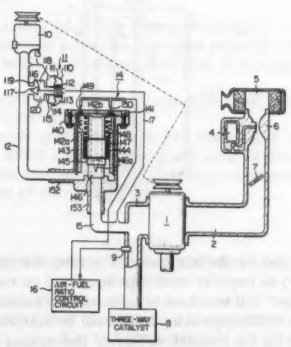
Hisasi Kawai, Toyohashi; Kazuhiro Sakurai, Susono, and Muneaki Matsumoto, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 62,147, Jul. 30, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,224

Claims priority, application Japan, Aug. 2, 1978, 53-94419

Int. Cl.³ F01N *3/22*

U.S. Cl. 60—276 **2 Claims**



1. An exhaust gas purifying system for internal combustion engines comprising:

air supply means for supplying secondary air to an exhaust gas system of an internal combustion engine,

a three-way catalyst for purifying polluting components in the exhaust gas,

an air-fuel ratio detector for detecting an air-fuel ratio from the component of the exhaust gas after being supplied with said secondary air,

an air-fuel ratio control circuit for determining whether said air-fuel ratio is higher or lower than a predetermined level at every predetermined period of time determined by a clock signal from an oscillator in response to an output signal of said air-fuel ratio detector, and for producing a control signal increasing or decreasing stepwisely by adding a predetermined value to or subtracting it from a previous value in accordance with a determination signal at said every predetermined period of time,

an air control valve having a spool adapted to be displaced continuously in proportion to said control signal of said air-fuel ratio control circuit by driving said spool by said stepwisely increasing or decreasing control signal thereby controlling the amount of the secondary air supplied to said exhaust gas system of said engine from said air supply means, and

pressure regulating means for regulating at a predetermined value the pressure difference of said secondary air between the upstream and downstream of said air control valve through which said secondary air passes.

4,363,211

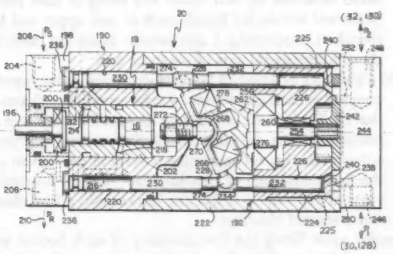
QUASI-OPEN LOOP HYDRAULIC RAM INCREMENTAL ACTUATOR WITH POWER CONSERVING PROPERTIES

Curtiss W. Robinson, and Eugene T. Raymond, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 1, 1980, Ser. No. 117,551

Int. Cl.³ F15B *13/044*

U.S. Cl. 60—476 **17 Claims**



7. An electrohydraulic mechanism, comprising:

an electric stepping motor operable by digital command signals to rotate in increments, and including a rotary output;

pumping means comprising a plurality of cylinders, and pistons within said cylinders movable axially;

hydraulic motoring means including a plurality of cylinders, pistons within said cylinders, and means operable in response to sequenced pressurization of the cylinders, and attendant piston movement, to apply driving forces to the pistons of said pumping means;

distributor valve means including a rotary control member and port means controlled by rotation of said rotary control member for communicating hydraulic pressure to a group of said motoring means cylinders which are in series while venting the rest of said cylinders;

means connecting the rotary output of the electric stepping motor to the rotary control member of the distributor valve means; and

valve means for said pumping cylinders, communicating each pumping cylinder with a hydraulic fluid inlet port

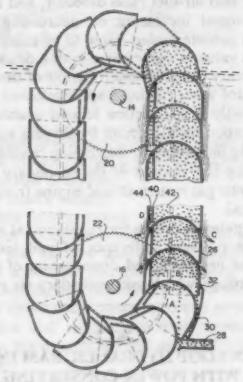
during retraction of the pistons and with an outlet port during extension of the pistons.

4,363,212

BUOYANCY PRIME MOVER

Thomas D. Everett, P.O. Box 29097, Indianapolis, Ind. 46229

Filed May 4, 1981, Ser. No. 260,390
Int. Cl.³ F03G *7/00*; F03B *9/00*
U.S. Cl. 60—496 **8 Claims**



1. An apparatus for converting the potential energy of a gas buoyant within a liquid into rotating mechanical energy comprising:

(a) rotating means supported by a frame including at least two upper and lower sprockets freely rotatable about shafts mounted on said frame and being at least partially immersed within the liquid, each of said upper and lower sprockets supporting a continuous chain for movement about a horizontal axis of rotation; and

(b) a plurality of adjacent buckets immersed in the liquid and coupled at each end to one of said continuous chains such that the buckets are equidistant and each bucket is in close proximity with an adjacent bucket to nest within said adjacent bucket for streamlined vertical movement about the horizontal axis of rotation, each bucket containing a vertical member to divide the bucket into a first chamber and a second chamber

whereby upon filling the first chamber of each bucket with a volume of the gas to displace the liquid from the first chamber of each bucket, the gas can expand when the bucket rises vertically through the liquid to flow from the first chamber into the second chamber and to prevent the gas from spilling from the bucket during the vertical rise so that the buckets move through the liquid with minimal turbulence and revolve the rotating means about the horizontal axis of rotation to generate power.

4,363,213

COMBINED BODY AND POWER GENERATING SYSTEM

George E. Paleologos, 9211 Georgia Ave., Silver Spring, Md. 20910

Filed Mar. 11, 1981, Ser. No. 242,439
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—505 **6 Claims**

1. An apparatus for producing power, comprising:

a hollow buoy;

electric generator means in said buoy;

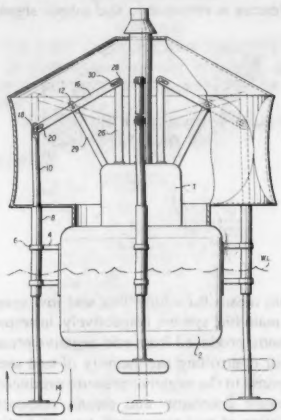
pneumatic turbine means in said buoy and operatively connected to said generator;

at least two pneumatic pump means in said buoy and operatively connected to said turbine means;

at least two vertical arms;

means connected to said buoy and adapted for constraining each of said arms and for permitting reciprocation of said arms in the vertical direction;

linkage means connecting one end of each of said arms to one of said pneumatic pump means;



means for sealing said linkage means in a water tight manner; and

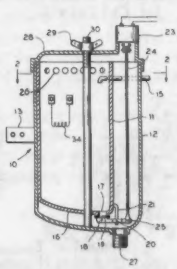
foot means on the other end of each of said arms, said foot means adapted to resist movement in said vertical direction wherein said arms, said means for constraining said arms, said means for sealing and said foot means are formed of lightweight non-corrosive plastic material.

4,363,214

TURBO-LUBRICATION SYSTEM

Robert W. Kiser, 564 Buckeye Dr., Livermore, Calif. 94550

Filed Jul. 7, 1980, Ser. No. 166,244
Int. Cl.³ F01M *1/18*; F02B *37/00*
U.S. Cl. 60—605 **14 Claims**



1. Apparatus for the lubrication of a turbo charger unit of the type having an impeller rotatably supported on bushings, said turbo charger unit mounted to an internal combustion engine, said engine of the type being lubricated by motor oil and having a pump for the circulation thereof throughout said engine, said apparatus comprising:

an outer, liquid-tight vessel;

an inner vessel smaller than said outer vessel and positioned within said outer vessel;

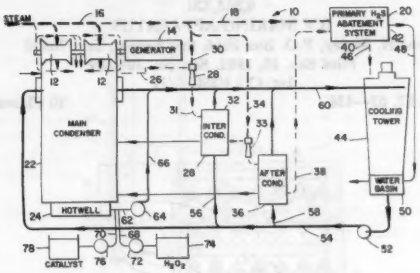
means to provide a portion of the flow of said lubricating oil to said inner vessel;
means to direct said lubricating oil from said inner vessel to said outer vessel during operation of said engine;
means to selectively drain oil retained in said inner vessel to said outer vessel; and
means to conduct a flow of oil from said outer vessel to said turbo charger unit.

4,363,215

H_2S ABATEMENT PROCESS

Spencer G. Sharp, Fairfax, Calif., assignor to Pacific Gas and Electric Company, San Francisco, Calif.

Filed Jan. 30, 1981, Ser. No. 230,263
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.2 **6 Claims**



1. In a process for utilizing geothermal steam from drilled wells producing waste gases vented to the atmosphere containing not over environmentally acceptable amounts of volatile sulfur contaminants as normally contained in said steam, a method for converting said volatile sulfur contaminants into water-soluble, less volatile sulfur compounds which are environmentally less objectionable and are substantially all retained in recirculated steam condensate, the steps which consist essentially of:
(a) introducing geothermal steam to a work zone and utilizing energy therein,
(b) withdrawing a stream of exhaust steam from said work zone to a first condensing zone to form a condensate and residual gases,
(c) separately withdrawing said gases to a series of further condensing zones to form further condensates and residual gases,
(d) recycling said further condensates to said first condensing zone and mingling with said first-mentioned condensate,
(e) continuously admixing with said mingled condensates from 1 mole to 2.5 moles hydrogen peroxide per mole of volatile sulfur contaminant expressed as hydrogen sulfide, and
(f) as catalyst from 0.5 to 1.0 parts per million of ferrous sulfate hydroxyacetic acid,
(g) to provide gases vented to the atmosphere containing volatile sulfur contaminants in not over environmentally acceptable amounts and a circulating condensate substantially free of corrosive solids.

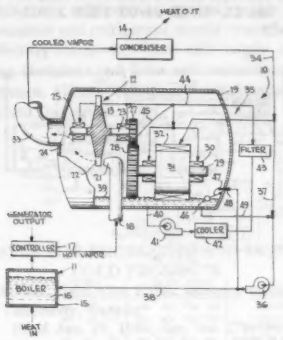
4,363,216

LUBRICATING SYSTEM FOR ORGANIC FLUID POWER PLANT

Lucien Bronicki, P.O. Box 68, Yavne, Israel

Filed Oct. 23, 1980, Ser. No. 199,841
Int. Cl.³ F01B 31/00
U.S. Cl. 60—657 **13 Claims**

1. In a closed Rankine cycle power plant including a boiler for converting liquid working fluid into hot vapor, a prime mover responsive to the hot vapor for producing power, a condenser for receiving vapor exhausted by the prime mover and converting the vapor into condensate, means for returning condensate from the condenser to the boiler, and means to



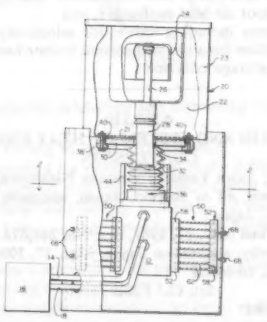
lubricate the bearings of the prime mover with condensate, the improvement comprising:
increasing the viscosity of the condensate used to lubricate the bearing to a level greater than the viscosity of the condensate returned to the boiler.

4,363,217

VIBRATION DAMPING APPARATUS

Guy S. Venuti, 56 Putnam St., Watertown, Mass. 02172

Filed Jan. 29, 1981, Ser. No. 229,735
Int. Cl.³ B01D 8/00
U.S. Cl. 62—55.5 **10 Claims**

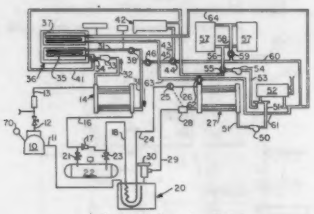


1. In apparatus for connecting the expander module of a cryogenic vacuum pump assembly to an opening in the bottom of the housing of a vacuum chamber, and including support means disposed about said pump, the improvement comprising, in combination:
a tubular, elastic bellows formed with opposite open ends;
means for vacuum-sealing one of said ends to said opening to communicate therewith;
means for vacuum-sealing the other of said ends to and in communication with said expander module so that said module is suspended by said bellows below and spaced from said housing; and
a plurality of vibration isolators for coupling said module to said support means, said isolators being arranged symmetrically around said module for constraining vibratory movement of said module.

4,363,218
HEAT PUMP USING SOLAR AND OUTDOOR AIR HEAT SOURCES

Otto J. Nussbaum, Huntsville, Ala., assignor to Halstead Industries, Inc., Scottsboro, Ala.

Filed Apr. 10, 1981, Ser. No. 252,799
Int. Cl.³ G05D *23/00*; F25B *27/02*
U.S. Cl. 62—79 **10 Claims**



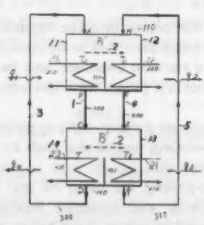
CYCLE	3-WAY VALVE 34	55	62	44	PUMPS 33	54	50
COOLING	ON	OFF	ON	OFF	ON	OFF	ON
DIRECT SOLAR HEAT	OFF	OFF	ON	OFF	OFF	ON	ON
WATER SOURCE HEAT PUMP	OFF	OFF	OFF	ON	ON	ON	ON
AIR SOURCE HEAT PUMP	OFF	ON	OFF	ON	ON	ON	ON

1. A heat pump including the combination of:
an outdoor air heat exchanger for supplying heat to a fluid medium only at a high coefficient of performance,
a solar energy heat exchanger for supplying heat to a fluid medium at times other than the operation of said outdoor air heat exchanger,
means including a storage container for selectively circulating fluid medium to either of said outdoor air heat exchanger or said solar energy heat exchanger,
first and second indoor heat exchangers,
means forming a non-reversing refrigeration cycle for transferring the heated fluid medium between said storage container and either said first indoor heat exchanger or said outdoor air heat exchanger, and
conduit means including valves for selectively circulating fluid medium between said second indoor heat exchanger and said storage container.

4,363,219
METHOD AND SYSTEM OF HEAT ENERGY CONVERSION

Yasuo Koseki; Akira Yamada; Yuusaku Nishimura, and Sankichi Takahashi, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,678
Claims priority, application Japan, Mar. 17, 1980, 55-32757; Mar. 31, 1980, 55-40331
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—101 **14 Claims**

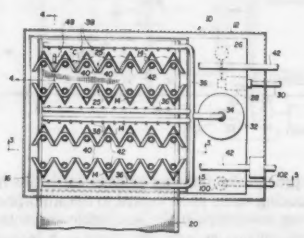


1. A method of converting low temperature heat energy into high temperature heat energy comprising steps of, concentrating a heat medium of liquid having components of unequal boiling points through evaporation of lower-boiling liquid under a first predetermined pressure, and absorbing vapor generated under a second predetermined pressure into higher-boiling liquid concentrated, wherein the improvement comprises the steps of:
absorbing vapor of the lower-boiling liquid generated in the concentrating step into an intermediate medium of liquid while cooling, said intermediate medium of liquid being different from both the lower-boiling liquid and higher-boiling liquid and having a boiling point between the lower boiling point and the higher boiling point of the heat medium;
evaporating the intermediate medium diluted with the lower-boiling liquid to generate vapor; and
absorbing the vapor generated from the diluted intermediate medium of liquid into the concentrated higher-boiling liquid.

4,363,220
ICE MAKING APPARATUS

Wayne H. Ripley, P.O. Box 2666, San Angelo, Tex. 76902

Filed Sep. 25, 1981, Ser. No. 305,689
Int. Cl.³ F25C *1/12*
U.S. Cl. 62—138 **10 Claims**



1. Ice making apparatus comprising:
an upstanding, corrugated freezing plate defining a plurality of substantially vertically extending ice cube forming channels on one side thereof,
a plurality of vertically spaced lugs in engagement with the opposite side of said freezing plate, each of said lugs being angled and having legs substantially parallel to and in close engagement with the adjacent surfaces of said freezing plate on said opposite side thereof so that legs of adjacent lugs surround said ice cube forming channels on said one side of said freezing plate to define vertically spaced ice cubes forming areas in said channels,
a refrigeration line in engagement with said lugs,
means for supplying water to said one side of said plate at the upper end thereof, whereby water flows down said one side of said plate into said channels and is frozen to form ice cubes thereon at vertically spaced locations adjacent to said lugs, and
means to effect removal of the ice cubes from said plate when they reach a predetermined size.

4,363,221
WATER HEATING SYSTEM HAVING A HEAT PUMP

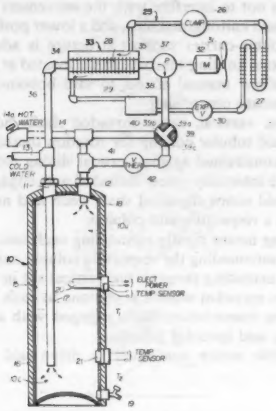
Kanwal N. Singh, 720 Grandview Ave., Columbus, Ohio 43215

Continuation of Ser. No. 67,615, Aug. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,820
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **16 Claims**

1. A water heating system for interconnection into a water system having a pressurized cold water source and a hot water utilization device comprising
a water storage tank with relatively lower and upper zones therein and having first conduit means for interconnecting

said tank in series flow relationship in the water system to permit inflow of cold water to said tank at said lower zone and outflow of water from said tank at said upper zone in response to requirements of a utilization device, and

water heating means including second conduit means connected in fluid flow relationship with said storage tank, fluid flow inducing means coupled with said second conduit means in operative relationship for effecting circulation of water therethrough from the lower to the upper



zone of said tank, and a closed loop heat pump system including heat obtaining means positionable in heat transferring relationship to a heat source to derive heat therefrom and control means responsive to the water temperature in the storage tank to control operation of said water heating means, said second conduit means and said heat pump system interconnected for effecting a transfer of heat only to water circulating through said second conduit means.

4,363,222

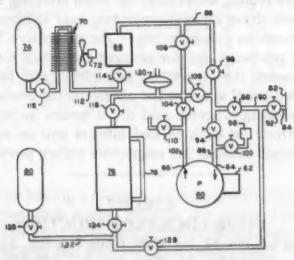
ENVIRONMENTAL PROTECTION REFRIGERANT DISPOSAL AND CHARGING SYSTEM

Robert L. Cain, Bryan, Ohio, assignor to Robinair Manufacturing Corporation, Montpelier, Ohio

Division of Ser. No. 4,657, Jan. 19, 1979, Pat. No. 4,261,178. This application Nov. 19, 1980, Ser. No. 208,182

Int. Cl.³ F25B *45/00*

U.S. Cl. 62—292 **7 Claims**



1. A refrigerant disposal and charging system for a refrigeration system comprising, in combination, a single electrically operated pump having a vacuum producing inlet and a pressure producing outlet, a refrigerant receiving container, a refrigerant supply container, a refrigerant metering container, a first valve and conduit system selectively interconnecting the refrigeration system, pump and refrigerant receiving container to evacuate refrigerant from the refrigeration system for storage in said receiving container and evacuation of the refrigeration system, and a second valve and conduit system selectively interconnecting the refrigeration system, pump, refrigerant metering container and refrigerant supply container for selectively transferring refrigerant from said supply container to said metering container and from said metering container to said refrigeration system charging the refrigeration system with refrigerant therefrom.

4,363,223

APPARATUS FOR PRODUCING AND DISPENSING COLD PRODUCTS

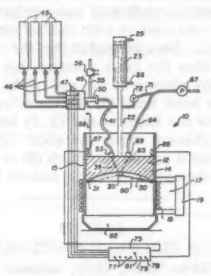
Ronald L. Abbott, Palo Alto, Calif., assignor to Inventco Sales Limited, Vancouver, Canada

Filed Jun. 29, 1981, Ser. No. 278,196

Claims priority, application Canada, Aug. 26, 1980, 359071

Int. Cl.³ F28G *1/16*; F25C *5/12*

U.S. Cl. 62—303 **2 Claims**



1. Apparatus for producing and dispensing cold products, comprising:

a cylinder having an inner forming wall;

a piston mounted for reciprocation in the cylinder and having a scraper in scraping engagement with the surrounding forming wall during movement of the piston, said scraper being at and surrounding the outer end of said piston;

power means connected to the piston for moving said piston axially in the cylinder;

a first spray nozzle mounted on an outer end of the piston and directed towards the forming wall around said end;

supply means for selectively making available at the piston a predetermined quantity of a substance in fluid form at a predetermined and constant pressure;

control means operable to supply the selected substance to the nozzle during movement of the piston, said first nozzle spraying the substances at an even rate over the forming wall during said movement, and said substance forming an even layer on the wall and being scraped off the wall by the scraper as the latter is moved by the piston over the wall with the substance thereon;

a second spray nozzle mounted on the piston and directed towards the scraper, said first and second nozzles being positioned centrally of said outer end of said piston, and

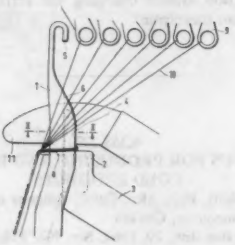
means for selectively supplying a cleansing fluid under pressure to the second nozzle, said second nozzle spraying the fluid over the scraper member and the scraper for cleansing purposes.

4,363,224

WARP KNITTING MACHINE WITH SLIDER NEEDLES

Roland Wunner, Bernstein, Fed. Rep. of Germany, assignor to Liba Maschinenfabrik GmbH, Naila, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,624
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005787
Int. Cl.[3] D04B 35/04
U.S. Cl. 66—120 3 Claims



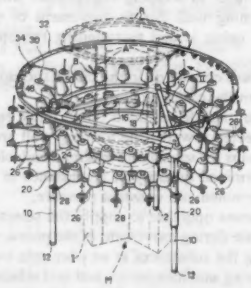
1. Warp knitting machine with slider needles which have a needle shank of channel form with hook head and a slider which covers the hook opening of the needle shank with a cover part fitted on a slider shank, where the needle shank and slider are moved in relation to one another so that the slider does not come into contact with the bottom of the channel of the needle shank, characterized in that the cover part (4, 14) is so far shorter than the hook opening that on closure of the hook opening by placing of the end of the cover part (4, 14) opposite to the hook head (5) the transition (7) of the cover part (4, 14) into the slider shank (2, 3) has come out of the region of the channel, while the slider (2) possesses such a cross-section that it carries the stitch (8) in each case without supporting on the needle shank (1) and/or hook head (5).

4,363,225

CREEL FOR CIRCULAR KNITTING MACHINES

Giovanni Marchisio, Turin, Italy, assignor to Giovanni Marchisio & C. S.r.l., Turin, Italy

Filed Sep. 17, 1980, Ser. No. 188,156
Claims priority, application Italy, Sep. 17, 1979, 68825 A/79
Int. Cl.[3] D04B 15/40
U.S. Cl. 66—125 R 5 Claims



1. A creel for use with a circular knitting machine, said creel comprising a frame carrying a plurality of bobbin-carriers arranged in at least one horizontal row adapted to extend around said knitting machine, wherein said frame includes:

a plurality of vertical columns adapted to be disposed around said knitting machine, each said column being tubular and having a vertical slit therein;

a framework rigidly interconnecting the upper ends of said columns at a height such as not to interfere with the movement of personnel about said knitting machine;

a respective slide comprising a sleeve surrounding and slidable vertically along, each said column;

a bobbin-carrier support structure supporting said bobbin-carriers and surrounding and rigidly interconnecting said slides; and

drive means connected to said slides to effect the sliding movement thereof between an upper position, in which said bobbin-carrier support structure is located at a height such as not to interfere with the movement of personnel about said knitting-machine, and a lower position in which said bobbin-carrier support structure is adapted to surround said knitting-machine and is located at a height such as to allow manual access to said bobbin-carriers, said drive means comprising

respective, vertical, screw-threaded shafts housed one in each said tubular column for rotation therein, said shafts being constrained against vertical sliding movement;

respective internally screw-threaded nuts engaged one with each said screw-threaded shaft, each said nut being slidable in a respective said column;

connecting means rigidly connecting each said nut with the sleeve surrounding the respective column, said connection means extending through the vertical slit in the column;

respective sprocket wheels keyed one to each said shaft;

an endless transmission chain engaged with and interconnecting said sprocket wheels;

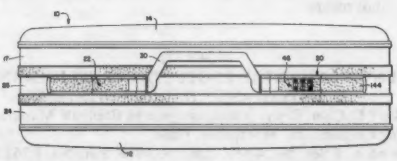
a reversible motor connected to drive said transmission chain.

4,363,226

LATCHING SYSTEM FOR LUGGAGE ARTICLES

Richard C. Remington, Pompton Plains, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Oct. 23, 1980, Ser. No. 200,000
Int. Cl.[3] E05B 65/52, 37/02
U.S. Cl. 70—70 37 Claims



1. In a latching system for a luggage article, comprising a pair of spaced latches, means mounting each of said latches for reversible swiveling movement between latching and unlatching positions, drive means connecting said latches for swiveling movements in unison between the respective latching and unlatching positions and for reverse swiveling movements in unison between the respective unlatching and latching positions, and a manual actuator for operating the latches in unison, the improvement wherein said drive means includes a pulley portion formed on each of said latches and an endless drive element looped around the respective pulley portions.

4,363,227

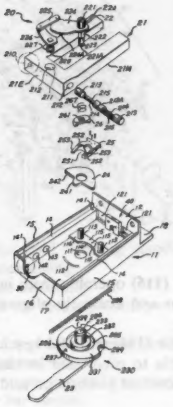
DOOR LOCK CONSTRUCTION

Jiung-P'eng Lo, No. 12, La. 1020, Chen Teh Rd., Taipei, Taiwan

Filed May 14, 1980, Ser. No. 149,665
Int. Cl.[3] E05B 55/00
U.S. Cl. 70—144 16 Claims

1. An improved construction of a door lock comprising: a lockbolt formed in U shape operable in association with an actuating mechanism having a drive shaft to be driven by the tail piece of a lock cylinder, an inter-locking device operable in

cooperation with said actuating mechanism in relation with the movement of said lock bolt to interlock the lock bolt in locking positions, a plurality of compression springs urging said lock bolt forward, an operating handle capable of selectively engaging with and disengaging from said drive shaft, a housing and a cover plate, a dog device comprising a dog plate formed with a trigger piece, said dog plate being urged by a spring to engage with a notch formed in the front end position of the lock bolt when the lockbolt is fully retracted, said trigger piece being adapted to be hit by the jamb to disengage said dog plate



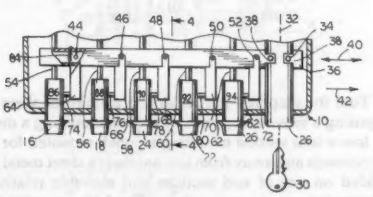
from the notch in the lockbolt when the door is closed, to enable the automatic locking of the door on closing, and second locking position setting means for moving said lockbolt into a second locking position, said second position setting means including disengaging means disengaging said operating handle from said drive shaft so that said bolt cannot be operated by said operating handle, jamming means for preventing operation of said bolt by said operating handle, and key means for rotating said drive shaft for moving said bolt into and out of said second locking position.

4,363,228

LOCKING MECHANISM FOR RANGES

Carlton Serrao, 535 Parkside Ave., Apt. 6N, Brooklyn, N.Y. 11226

Filed Nov. 24, 1980, Ser. No. 209,594
Int. Cl.³ F16K *35/00*; F24C *3/12*
U.S. Cl. 70—177 **3 Claims**



1. In a range having a plurality of individually operated knob controlled operated shafts, each of the shafts rotatable and controlling the turning on and off of an individual cooking or heating apparatus, the improvement comprising:

an elongated bar, the longitudinal axis of said bar being disposed tangentially slidable relative to the surface and transverse to the longitudinal axis of each of the shafts, each of the shafts being disposed in spaced apart parallel relationship to one another,

a plurality of arms, one end of each of said arms pivotably secured to said bar at pivot axes located adjacent to each of the shafts,

means to bias the other end of each of said arms towards an adjacent shaft thereto,

a lock, said lock locking the pivot axes of said arms a greater distance radially outwardly from the adjacent shaft thereto when in a locked position than the distance between the adjacent shaft and the pivot axes when said lock is in an unlocked position, and

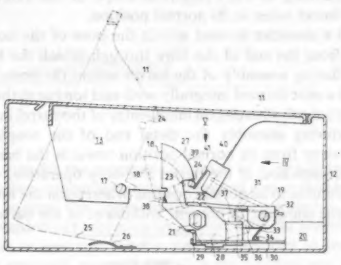
a plurality of fingers, one end of one of said fingers fixedly secured to the other end of one of said arms, the other end of said one finger being located intermediate the adjacent shaft and the arm adjacent thereto, each of the shafts having an opening extending radially inwardly from the exterior surface thereof, said other end of said one finger being disposed located within the opening of the adjacent shaft when the opening is rotatably aligned with the longitudinal axis of said one finger and when said lock is in the locked position, said other end of said one finger being disposed outwardly of the opening when said lock is in the unlocked position.

4,363,229

RECEPTACLE FOR PAPER CURRENCY, COINS AND THE LIKE

Guenter Baitz, Berlin, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,846
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1979, 2907643
Int. Cl.³ E05B *47/00*
U.S. Cl. 70—279 **8 Claims**



1. A lockable cash container suitable for use in combination with but mechanically remote from a cash register or the like comprising:

a generally rectangular box-like casing (12) of oblong configuration having a closed bottom, front, rear and sides and at least a partially open top;

a cover (11) for closing the top of the casing (12);

pivot means (17) defining a pivot axis extending across the width of casing (12) between the front and rear thereof and between the top and bottom thereof for mounting the cover (11) to the casing (12) for pivotal motion between a first stable position flush with and closing the open top and a second stable position which is angularly displaced from the first position and in which the casing top is open and at least a portion of the cover is recessed into the casing;

thrust spring means (42, 43, 44, 45) within the casing (12) for urging the cover (11) toward the second position;

a locking bar (18) pivotally mounted within the casing (12) for rotation between a first locking position in which the bar (18) may be lockingly engaged with the cover (11) and a second unlocking position in which the bar (18) and cover (11) are disengaged;

means (38) biasing the locking bar (18) into the first position;

key lock means (21) mounted within the casing but externally accesible for manually operating the locking bar (18); and

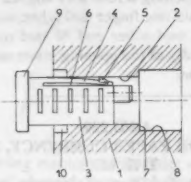
electromagnetic means (20) mounted within the casing (12) for remotely electrically operating the locking bar (18).

4,363,230

CYLINDRICAL LOCKS

Paul Lipschutz, Croissy, France, assignor to SODEX-MAGISTER, Societe d'Exploitation des Brevets Neiman, Croissy, France

Filed Sep. 30, 1980, Ser. No. 192,289
Claims priority, application France, Oct. 8, 1979, 79 24951
Int. Cl.³ E05B 9/08
U.S. Cl. 70—370 3 Claims



1. In a cylinder lock of the type comprising a body and a barrel journalled within a bore in said body, the provision of

(a) a resilient tongue extending longitudinally of the barrel, said tongue being formed integrally with said barrel and having an exterior surface of part cylindrical shape conforming to the cylindrical shape of the exterior of the barrel when in its normal position,

(b) a shoulder formed within the bore of the body remote from the end of the bore through which the bore enters during assembly of the barrel within the bore, and

(c) a nose formed integrally with said tongue at the distal end thereof, whereby on initial entry of the barrel into the bore during assembly the distal end of the tongue deforms away from its normal position towards the barrel and on completion of the barrel assembly operation, the tongue returns to its normal position whereupon the nose engages the shoulder to prevent withdrawl of the barrel.

4,363,231

DOOR LOCK

John R. Kaveney, Jr., East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00854, § 371 Date Jul. 7, 1980, § 102(e) Date Jul. 7, 1980
PCT Filed Jul. 7, 1980, Ser. No. 262,062
Int. Cl.³ E05B 55/04
U.S. Cl. 70—484 10 Claims

1. A lock assembly for a latch structure (104) which latches a vehicle door (100), said lock assembly comprising:

a first handle (108);

a lock ring (124) affixed to said first handle (108);

spaced apart means (140,142) carried by said lock ring (124);

rigid stop means (210) extending into position to be contacted by one of said spaced apart means (142);

a second handle (114) extending in a direction opposite to said first handle (108);

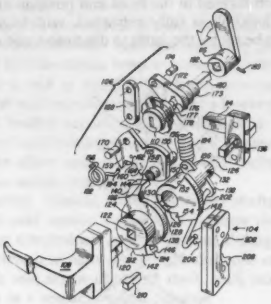
a bellcrank (132) fixed to said second handle (114) and being coaxially aligned with said lock ring (124) and being rotatably mounted relative thereto;

an actuator rod (202) connecting said bellcrank (132) and said latch structure (104) for operating said latch structure (104);

locking means (158) mounted to prevent rotation of said lock ring (124) by engaging one of said spaced apart means (140), said locking means (158) being pivotable between a locked position and an unlocked position;

a key lock means (110) operably mounted on the outside of said vehicle;

means (168,172) connecting said locking means (158) to said key lock means (110); and



a third handle (116) operable from inside said vehicle and connected to and coaxially aligned with said key lock means (110);

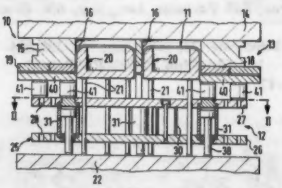
said third handle (116) and said key lock means (110) each being operable to pivot said locking means (158) into a locked or unlocked position on said lock ring (124).

4,363,232

TOOL FOR SHAPING SHEET METAL

Erhardt Reitter, Sulzfeld, Fed. Rep. of Germany, assignor to Uniplanung Metall-und Kunststoff-Engineering GmbH & Co. KG, Dumersheim, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,895
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948396
Int. Cl.³ B21D 22/00
U.S. Cl. 72—350 4 Claims

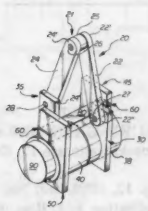


1. Tool for shaping—particularly drawing—of sheet metal, comprising a movable upper tool section mounting a die and a field lower tool section mounting a punch mounted for movement towards and away from one another; a sheet metal holder provided on one of said sections and movable relative to a sheet metal-shaping contour thereof; and pressure distributing means also movable relative to said shaping contour and including two spaced-apart plates and spacers connecting said plates and maintaining them at a predetermined distance, said pressure distributing means constituting an abutment for said holder; said spacers comprising tubular spacing sleeves arranged between said plates; said sleeves each comprising a cylinder of a fluid-operated cylinder and piston unit, and a piston slidable back and forth in said cylinder; said piston being supported at one side of said pressure distributing means by a piston rod extending through one of said spaced-apart plates.

4,363,233
METHOD AND APPARATUS FOR COLD FORMING STABILIZER BLADE MEANS FROM ELONGATED MEMBERS

Ernest G. Evans, P.O. Box 52144, Lafayette, La. 70505

Filed Dec. 23, 1980, Ser. No. 219,528
Int. Cl.³ B21D *11/14*
U.S. Cl. 72—383 5 Claims

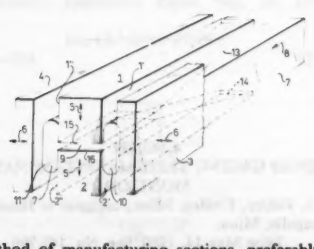


1. An apparatus for cold forming stabilizer blades from elongated members comprising:
   a. toggle joint means including:
      1. first and second bar means pivotally connected adjacent one end;
      2. first sleeve means pivotally secured to the other end of said first bar means; and
      3. second sleeve means pivotally secured to the other end of said second bar means;
   b. first and second clamping means on said first and second sleeve means respectively including retaining means to receive and position an elongated member for forming the stabilizer blade; and
   c. mandrel means for receiving said sleeve means so that a force applied to spread apart said first and second bar means rotates said first and second sleeve means in opposite directions on said mandrel to rotate said first and second bar means away from each other to bend the elongated member to form a stabilizer blade.

4,363,234
METHOD AND APPARATUS FOR FORGING SECTIONS

Per-Olof Strandell, Bockstigen 3, 183 51 Täby, Sweden

Filed Dec. 2, 1980, Ser. No. 212,126
Claims priority, application Sweden, Dec. 10, 1979, 7910161
Int. Cl.³ B21D *41/00*
U.S. Cl. 72—402 10 Claims

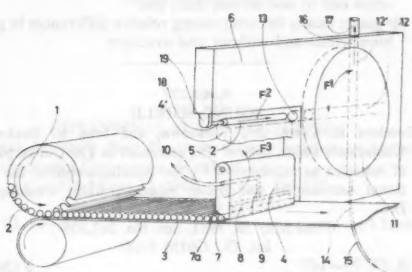


1. A method of manufacturing sections, preferably beam preforms, where a blank with preferably rectangular cross-section is forged between a pair of web tools moved to and from each other for forming a web portion on said blank, and is simultaneously forged between at least one flange tool and the web tools, where each flange tool is moved to and from the web tools in a direction perpendicular to the direction of movement of the web tools (1, 2) for upsetting the blank portion located between the web tools and the flange tool to form a flange portion between the flange tool and the sides of the web tools, and wherein the blank successively and in steps is fed in between the web tools (1) and successively and in steps is deformed by means of said web and flange tools, characterized in that: forging, at least partly, is performed by means of simultaneous movement of the web tools and said at least one flange tool and in that the material of the width of the blank is moved laterally by forging the blank (7) between two opposing ridges on the web tools, each ridge on each web tool including an inclined entrance part of the associated web tool, the initial forging by said ridges taking place before the blank is deformed by the residual portion of said inclined entrance parts, the longitudinal direction of the ridge being in parallel with the direction, in which the blank is advanced.

4,363,235
SAMPLING APPARATUS FOR A PRODUCTION LINE

Philippe Vulliens, Palezieux, and Guy Siggen, Juriens, both of Switzerland, assignors to Baumgartner Papiers S.A., Switzerland

Filed Oct. 21, 1980, Ser. No. 199,235
Claims priority, application Switzerland, Jan. 24, 1980, 557/80
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 9 Claims



1. Apparatus for the automatic removal of a sample from a production line comprising a rotary removal arm connected to a vacuum source, the removal arm being provided with a concave rounded edge forming an abutment for the samples to be removed, at least one tubular member intended to receive the sample removed, means for driving the removal arm in an oscillating movement between a first removal position and at least one second position in which the sample is placed opposite the tubular transfer member, means for introducing the sample into the tubular transfer member, said concave rounded edge serving to guide the sample at the time of this latter introduction, the removal arm being mounted to pivot about a spindle parallel to its concave edge, and the tubular transfer member being constituted by a diametral bore in a rotary disc oscillating between a first horizontal position in which the sample is introduced into said bore and a second transfer and-/or checking position.

4,363,236
METHOD AND APPARATUS FOR DETECTING LEAKS IN A STRUCTURE

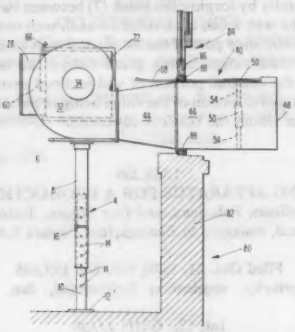
Harry W. Meyers, 843 Kings Croft, Cherry Hill, N.J. 08034

Filed Apr. 28, 1980, Ser. No. 144,743
Int. Cl.³ G01M *3/26*
U.S. Cl. 73—40 23 Claims

1. An apparatus for detecting the breathing characteristics of a structure having at least one aperture available to the atmosphere outside said structure, said apparatus comprising:
   a first duct having first and second open ends, said first end opening to the atmosphere within said structure;
   an evacuation means, said evacuation means having an inlet portion and an outlet portion said inlet portion of said

evacuation means being in a sealed relationship with said second open end of said first duct;

a second duct having a first end, said first end being in a sealed relationship to said outlet portion of said evacuation means, and a second open end which is open to the atmosphere without said structure;



air velocity gauge means positioned approximate to said open end of said second duct; and

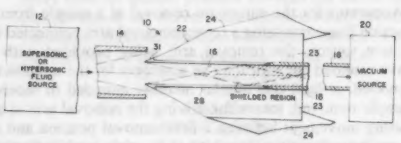
air gauge means for determining relative differences in pressure within and without said structure.

4,363,237

SOUND SHIELD

Theodore R. Creel, Jr., Yorktown, and Ivan E. Beckwith, Glouscester Point, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 28, 1981, Ser. No. 267,935
Int. Cl.³ G01M *9/00*
U.S. Cl. 73—147 **5 Claims**



1. A noise shielding system for high speed transition research in supersonic and hypersonic wind tunnels provided with a source of supersonic or hypersonic fluid flow, a nozzle area through which the fluid flows, a test section for receiving the fluid flow and subjecting a test model positioned therein to the fluid flow and an exit area for the fluid flow, the improvement therewith comprising:

said test section being substantially a rectangular configuration;

a vacuum chamber surrounding each side of the test chamber and having conduits leading therefrom to a vacuum source;

a plurality of spaced individual rod elements forming the four sides of said test chamber thereby providing fluid communication between said test chamber and said vacuum chamber;

one end of each said spaced rod elements terminating and merging with a faired entrance shield portion of said vacuum chamber at the end of said test chamber receiving the fluid flow;

the other end of each said rod element terminating and merging with a rectangular passageway leading to the wind tunnel exit;

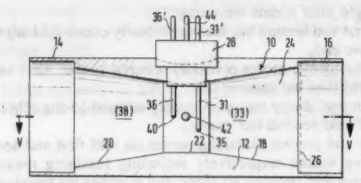
said rod elements and said entrance shield portion being slightly inclined inwardly toward the downstream end of said test chamber to provide a taper and slightly reduced cross-section dimensions to said test chamber at the exit end thereof.

4,363,238

DEVICE FOR MEASURING THE BREATH OF PATIENTS

Franz Willam, Haubenschlossstrasse 17, D-8960 Kempten, Fed. Rep. of Germany

Filed Aug. 12, 1980, Ser. No. 177,375
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933116
Int. Cl.³ G01F *1/68*; A61B *5/08*
U.S. Cl. 73—204 **2 Claims**



1. An improvement in a fluid flow measuring apparatus for detecting direction of flow and the magnitude thereof, the apparatus comprising a conduit, a pair of temperature sensors arranged in the conduit, a flow resistance member arranged between radial planes of said pair of temperature sensors and axially aligned with one of said pair of temperature sensors and means for tending to maintain the temperature of each sensor at a predetermined high level above the temperature of the fluid, the improvement comprising an arrangement in which the other one of said pair of temperature sensors is radially offset with respect to the axial alignment plane intersecting the one temperature sensor and said flow resistance member.

4,363,239

LIQUID GAGING SYSTEM CONTAMINATION MONITOR

Jerome A. Fahley, Fridley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

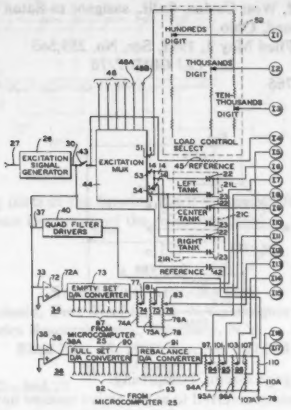
Filed May 14, 1980, Ser. No. 149,790
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **46 Claims**

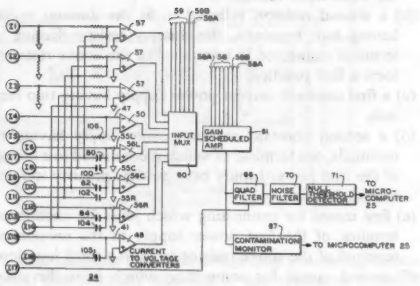
1. In a liquid gaging system, an apparatus for monitoring a quadrature signal from a capacitive sensor, comprising:

a capacitive sensor for providing a liquid measurement signal related to a liquid in a tank, the liquid measurement signal comprising a capacitive signal and a quadrature signal; and

means for monitoring the quadrature signal through null

detection of the capacitive signal, the null detection being implemented through a successive approximation sequence, the means for monitoring being connected to the sensor.





4,363,240

LIQUID-LEVEL INDICATING WINDOW

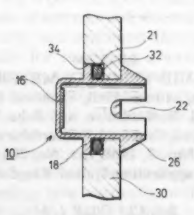
Yoshinobu Mizusaki, Ueda, Japan, assignor to Nissin Kogyo Co., Ltd., Naganoken, Japan

Filed Sep. 29, 1980, Ser. No. 192,019

Claims priority, application Japan, Sep. 29, 1979, 54-135473[U]

Int. Cl.³ G01F *23/02*

U.S. Cl. 73—334 **12 Claims**



1. A liquid-level indicating device adapted to be mounted substantially horizontally in an aperture provided in the wall of a liquid container which comprises;

a liquid level body,

a liquid-level indicating window provided at one end of said liquid level body for projection from the wall of the liquid container a sufficient distance to provide maximum exposure to light from the front and side directions, compressible attachment means containing an enlarged end portion provided at the other end of said liquid level body, said enlarged end portion being compressed for insertion through the wall aperture and expanded for pressure engagement with the inside wall of the container,

mounting flange disposed on the body of the indicating device for engagement with the wall of the container at said aperture, said mounting flange cooperating with said compressible attachment means to effect said mounting in said aperture, and

a liquid level sign portion disposed on said liquid-level indicating window said liquid level sign portion having a refractive index substantially the same as that of the liquid disposed in the liquid container and having a different light refractive index than the remaining portion of said liquid-level indicating window, whereby changes in the liquid level in the container can be visually observed from outside of the container.

4,363,241

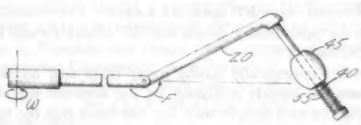
ROTATIONAL SPEED GOVERNOR

Thomas A. Egolf, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1980, Ser. No. 219,755

Int. Cl.³ G05D *13/14*

U.S. Cl. 73—536 **11 Claims**



1. A governor providing actuation of a body in response to the rotational speed of said governor, said governor being characterized by:

a control arm connected to said body and pivotable about an axis therethrough, said body applying a restoring force to said control arm,

a weight, carried by said control arm and under conditions of centrifugal loading thereof, due to rotation of said governor, being urged outwardly along a path extending from an outer end of said control arm toward the plane of rotation of said body thereby pivotally biasing said control arm in a direction opposite that of said restoring force, and

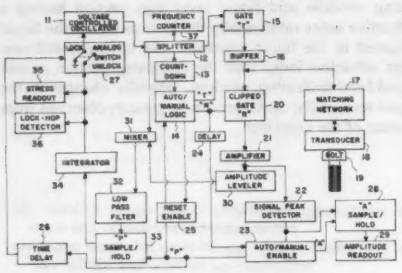
means carried by said control arm for restraining said weight in a fixed position with respect to said control arm at rotational speeds less than a first predetermined speed and accommodating centrifugal loading of said weight at rotational speeds greater than said first predetermined speed by displacement of said weight relative to said control arm, said centrifugal loading of said weight at speeds less than said predetermined speed overcoming said restoring force to effect pivoting of said control arm in one direction, said centrifugal loading at selected speeds greater than said predetermined speed being overcome by said restoring force thereby causing pivoting of said control arm in a direction opposite said one direction.

4,363,242

PULSED PHASE LOCKED LOOP STRAIN MONITOR

Joseph S. Heyman, Gloucester, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 23, 1980, Ser. No. 199,767
Int. Cl.[3] F16B *13/02*; G01H *1/00*; G01N *29/00*
U.S. Cl. 73—761 10 Claims



1. An instrument for measuring changes in strain of a sample comprising:

transducer means attached to said sample for converting electrical signals into acoustic signals in said sample and for converting the acoustic signals reflected by said sample into electrical signals;

a continuous wave RF electrical source

means for periodically gating said RF source to said transducer means;

means for periodically gating away from said transducer means the signals produced by the acoustic signals reflected by said sample such that the times that the signals are gated away from said transducer means do not overlap the times that the RF source is gated to said transducer means;

means receiving the RF signals from the RF source and said signals periodically gated away from said transducer means for producing a DC electrical signal proportional to the change from a fixed difference in phase of the two received signals;

means receiving said signals periodically gated away from said transducer means for producing a pulse during each period that signals are gated away from said transducer means and during a time that a reflected signal is received, the duration of said produced pulse being substantially less than the duration of the gating away time;

means receiving said DC electrical signal and said pulse for sampling said DC electrical signal at the time said pulse is received and holding the sampled signal until the next pulse is received; and

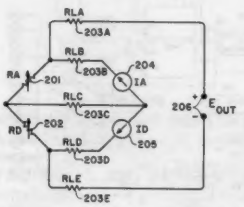
means receiving said sampled and held signal for changing the frequency of said RF source to maintain said fixed difference between the phases of said RF source to maintain said fixed difference between the phases of said RF source and said signals periodically gated away from said transducer means whereby the changes in frequency of said RF source are proportional to the changes in strain in said sample.

4,363,243

STRAIN GAGE MEASUREMENT CIRCUIT FOR HIGH TEMPERATURE APPLICATIONS USING DUAL CONSTANT CURRENT SUPPLIES

Ronald I. Poff, West Covina, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 1, 1981, Ser. No. 259,565
Int. Cl.[3] G01B *7/16*
U.S. Cl. 73—766 6 Claims



1. A strain gage circuit, comprising:

(a) a first resistor referred to as the active resistor having two terminals, the active resistor being subject to an applied strain force which produces an accompanying change in the value of its resistance,

(b) a second resistor, referred to as the dummy resistor, having two terminals, the dummy resistor having one terminal connected to a terminal of the active resistor to form a first junction,

(c) a first constant current power supply having two terminals,

(d) a second constant current power supply having two terminals, one terminal of which is connected to a terminal of the first power supply having a like polarity to form a second junction,

(e) first means for connecting which joins the unconnected terminal of the first power supply to the unconnected terminal of the active resistor to form a third junction,

(f) second means for connecting which joins the unconnected terminal of the second power supply to the unconnected terminal of the dummy resistor to form a fourth junction,

(g) third means for connecting which joins the first and second junctions, and

(h) fourth means for connecting which joins the third and fourth junctions to a means for measuring voltage, the means for measuring voltage being of the type which has an internal impedance substantially higher than resistance of the sum of the active resistor, dummy resistor and the fourth means for connecting to make the voltage reading of the means for measuring voltage substantially independent of the value of the sum of these resistances.

4,363,244

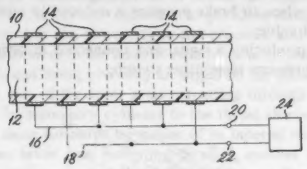
FLUID VELOCITY METER

Riadh H. A. Rabeh, Mitchel Hall, Cranfield Institute of Technology, Cranfield, Bedfordshire, and John Hemp, 5 Henson Close, Wharley End, Cranfield, Bedfordshire, both of England

Filed Nov. 7, 1980, Ser. No. 204,902
Claims priority, application United Kingdom, Nov. 8, 1979, 7938714
Int. Cl.[3] G01F *1/64*
U.S. Cl. 73—861.08 8 Claims

1. A method of sensing the flow of a fluid comprises receiving a noise signal generated by the presence in the flowing fluid of field-generating parts; and determining the mean frequency of the received signal.

4. Apparatus for sensing the flow of a fluid comprises means for receiving a noise signal generated by the presence of field-



generating parts of the flowing fluid; and means for determining the mean frequency of the received signal.

4,363,245

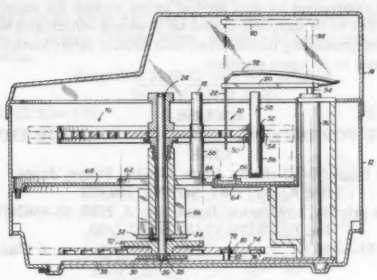
SAMPLING APPARATUS

Carl J. Schmid, Port Washington, N.Y., assignor to Peerless Electronics Research Corp., Westbury, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,908

Int. Cl.³ G01N *1/00*

U.S. Cl. 73—864.22 **14 Claims**



8. Liquid sampling apparatus comprising a sampling station, a support arm pivotally mounted in said apparatus, a sample carrier disk rotatably mounted on said support arm for carrying a plurality of sample containers thereon arrayed in a generally spiral pattern about the pivot mounting of said disk, said spiral pattern being located on said disk to pass through said sampling station when rotation of the disk is coordinated with oscillation of said arm; a cam disk rotatably mounted on said support arm in spaced parallel relation to said carrier disk and operatively engaged with said carrier disk for simultaneous rotation therewith; said cam disk having a generally spirally shaped cam slot formed therein which is generally complementary to the spiral array of said containers; a cam follower engaged in said slot and located in a fixed position in said apparatus; means for intermittently rotating said disks on said arm whereby the arm is pivoted upon rotation of the disk as a result of engagement of said cam disk slot and follower thereby to successively move said containers through said sampling station; a receptacle for containing a wash liquid movably mounted in said apparatus for vertical movement between upper and lower positions adjacent said sampling station; and means for removing a sample of liquid from a sample container at said sampling station including a sampling tube, means for mounting said sampling tube adjacent said sampling station for both vertical and horizontal pivotal movement; means for moving said sampling tube vertically with respect to said sampling station between a lower position wherein the tube is inserted in a sample container at said station and a raised position above the sampling station, and means for pivoting said tube from said raised position over the sampling station to a position over said receptacle; and means for moving said receptacle between its lower position and its upper position when the tube is positioned over the receptacle to immerse said tube in the liquid contained in said receptacle.

4,363,246

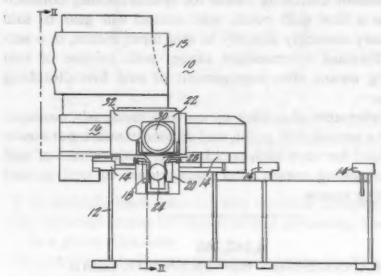
MULTI WORM-RACK APPARATUS

Richard S. Szewczyk, Rochester, N.Y., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 12, 1980, Ser. No. 186,611

Int. Cl.³ F16H *29/20, 35/06*

U.S. Cl. 74—89.14 **2 Claims**



1. Apparatus for moving a carriage on a machine comprising a driven worm, a pair of worm racks arranged at opposite sides of the worm and extending generally parallel to the axis of rotation of the worm, a drive assembly mounting the worm for rotation to cause relative movement of the carriage and the racks, and means including a pivotal connection with the carriage mounting the assembly for limited movement to permit a swingable diametrical self-centering action of the worm between the racks.

4,363,247

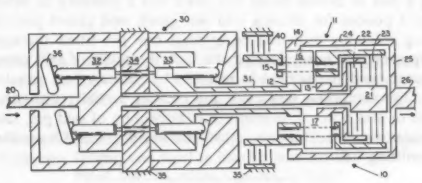
TRANSMISSION WITH A FIRST-STAGE HYDROSTATIC MODE AND TWO HYDROMECHANICAL STAGES

William E. Weseloh, San Diego, Calif., assignor to Orshansky Transmission Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,304

Int. Cl.³ F16H *47/04, 3/44*

U.S. Cl. 74—687 **7 Claims**



1. A three-range power transmission with two shift points, comprising:

a stationary frame,

input means,

output means,

a single Ravigneau-type planetary assembly having a single ring gear and a single carrier with first and second sets of planet gears intermeshed with each other, said first set of planet gears being in mesh with said ring gear, first and second sun gears, said first set of planet gears engaging with said first sun gear and said second set of planet gears engaging with said second sun gear, said ring gear being directly connected to said output means,

a reversible speed-varying module at all times directly and

rigidly connected on one side to said input means and, on its other side, connected at all times directly and rigidly to said first sun gear, thereby connecting said input means to said first sun gear at all times,

braking means for releasably connecting said planetary assembly to said frame in a first, forward starting range and in a reverse range, whereby when said braking means is engaged, said output means is driven from said input means through said speed-varying module, said first sun gear and said first set of planet gears,

first releasable clutching means for synchronously connecting, at a first shift point, said second sun gear of said planetary assembly directly to said input means, in a second, forward intermediate range, with release of said braking means after engagement of said first clutching means,

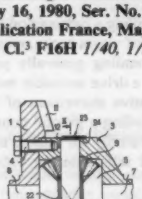
second releasable clutching means synchronously connecting, at a second shift point, said carrier to said input means in a third forward high-speed range, with release of said first clutching means after engagement of said second clutching means.

4,363,248

TRANSMISSION DIFFERENTIAL GEAR

Roger Brisabois, Clamart, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed May 16, 1980, Ser. No. 150,682
Claims priority, application France, May 18, 1979, 79 12723
Int. Cl.³ F16H *1/40, 1/38*
U.S. Cl. 74—713 **9 Claims**



1. A transmission differential gear comprising a cage enclosing a pair of driven bevel sun gears and a plurality of bevel planet pinions for driving said sun gears, said planet pinions being rotatably mounted on at least one pin fitted through corresponding bores formed through the walls of said cage, wherein said pin is held in position by means of an annular member encircling said cage and closing partially the outer ends of said bores to permit visual inspection of said pin, said annular member retaining said at least one pin in said bores and permitting free rotation of said at least one pin.

4,363,249

SAFETY APPARATUS FOR VEHICLES HAVING AUTOMATIC TRANSMISSIONS

Jerald L. Stugart, P.O. Box 1447, Greeley, Colo. 80632

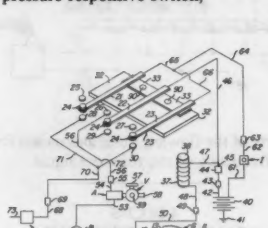
Filed Jun. 30, 1980, Ser. No. 164,252
Int. Cl.³ F02N *15/10;* **B60K** *28/00;* **G08B** *21/00*
U.S. Cl. 74—850 **8 Claims**

1. Safety apparatus for a truck or tractor having an engine, an automatic transmission, air brakes and alternative brakes which set when air brake pressure is reduced to a predetermined value, for producing a signal when such transmission is shifted away from neutral while the engine is running for an extended period of time and such alternative brakes are utilized for parking purposes, comprising:

a neutral safety switch which is moved to a closed position upon shifting of the automatic transmission to a neutral position but moved to an open position when the automatic transmission is shifted to a drive position;

an air pressure responsive switch which is moved to a closed position when air brake pressure is reduced to said predetermined value;

means for producing a signal and connected in series with said air pressure responsive switch;



current supply means; and

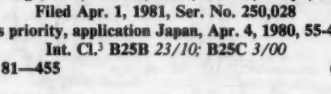
means controlled by said neutral safety switch for causing current to be supplied to said air pressure switch and said signal producing means when said neutral safety switch is moved to an open position.

4,363,250

DEVICE FOR DRIVING SCREW, PIN, RIVET OR THE LIKE

Asakichi Suga, 20-7,3-chome, Chuo, Ota-ku, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 250,028
Claims priority, application Japan, Apr. 4, 1980, 55-45628[U]
Int. Cl.³ B25B *23/10;* **B25C** *3/00*
U.S. Cl. 81—455 **6 Claims**



1. A device for driving a screw, pin, rivet or the like comprising

a stationary cylinder in the form of hollow cylinder;

a rotary cylinder to which a grip end cylinder is rotatably attached, said rotary cylinder being telescopically fitted on said stationary cylinder so that relative sliding and rotational movement are ensured therebetween;

a center rod with its one end secured to the rotary cylinder, having a flange-shaped collar at the middle part and a reduced diameter extension which is extended from said collar to the free end thereof;

a thrust sleeve axially displaceably arranged in front of the collar of the center rod in the stationary cylinder, said thrust sleeve being formed with an inner tapered part around its front edge and a locking recess in position on the outer surface thereof;

a conical headed press block axially displaceably arranged on the reduced diameter extension of the center rod in the thrust sleeve to move forwards by means of a spring means;

a nozzle consisting of a pair of upper and lower nozzle halves, each of which has an inclined rear part which is so formed as to come in engagement to the inner tapered part of the thrust sleeve at its outer side and to the conical headed part of the press block at its inner side;

a support block arranged on the fore part of the reduced diameter extension of the center rod to support the nozzle,

siad support block being formed with upper and lower axially extending grooves in which the upper and lower nozzle halves are received to perform swinging movement over the convexity in the grooves; and

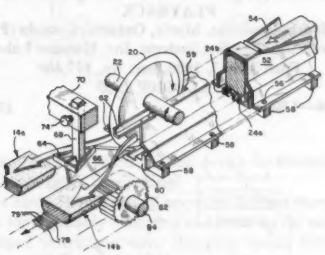
a control lever in the form of twin lever arms having tapered ends and being pivotally arranged on the stationary cylinder, one of the lever arms extending through an aperture on the stationary cylinder to the thrust sleeve to displace the same forwards by means of its tapered end, while the other lever arm extending through another aperture on the stationary cylinder into said recess formed on the thrust sleeve to lock the same by means of its tapered end.

4,363,251

METHOD AND APPARATUS FOR CUTTING BREAD

John L. Carlson, Duluth, Minn., assignor to Jeno's Inc., Duluth, Minn.

Filed Jul. 3, 1980, Ser. No. 165,779
Int. Cl.³ B26D *3/30*
U.S. Cl. 83—105 **5 Claims**



1. An apparatus for cutting a loaf of bread, comprising:

(a) a circular cutting blade mounted on an axis for rotation in a substantially vertical plane;

(b) a first conveying means for conveying the loaf of bread from upstream of said cutting blade to downstream of said blade in a direction substantially perpendicular to said axis;

(c) a channel upstream of said blade and extending into cooperating relationship with said blade for guiding the loaf of bread as it is conveyed to said cutting blade whereby the one piece loaf is cut through vertically on its centerline into only two pieces of bread by said cutting blade;

(d) said channel confining the outer periphery of said loaf while said cutting blade cuts it into two pieces and enclosing the major portion of said blade below said shaft;

(e) a second conveying means extending in the same direction as said first conveying means for receiving said two pieces and conveying them downstream of said blade away from said blade; and

(f) bread piece displacement means downstream of said blade;

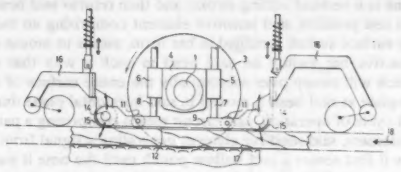
(g) said bread piece displacement means including means which engage the upper portion of each of said pieces of bread and cause the pieces of bread to separate and drop downwardly onto said second conveying means with the cut face of each piece of bread facing upwardly.

4,363,252

MULTIPLE BLADE CIRCULAR SAWING MACHINE

Karl Volk, Freiburg, Fed. Rep. of Germany, assignor to Interholz Technik GmbH, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,695
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011926
Int. Cl.³ B27B *5/04*
U.S. Cl. 83—422 **7 Claims**



1. A multiple blade circular saw machine comprising

(a) conveyor means for continuously advancing a workpiece in a given direction;

(b) a driving shaft extending transversely to the advancing direction, above the conveyor means;

(c) at least two circular saw blades coaxially mounted on the driving shaft at spaced-apart positions, the saw blades rotating with the shaft;

(d) at least two elongate depresser members extending parallel to the advancing direction, between the driving shaft and the conveyor means, each depresser member having a longitudinal slot through which a respective one of the saw blades extends, at least one presser roller being mounted on the depresser member upstream of the shaft with respect to the advancing direction, and at least one presser roller being mounted on the depresser member downstream of the shaft, the presser rollers extending beneath the depresser member adjacent the respective saw blade so as to press the workpiece against the conveyor means; and

(e) at least one displacer head defining the location of a respective one of the saw blades along the shaft, the displacer head being movable along the shaft together with the respective saw blade and being fixable at a given position, the respective depresser member being mounted on the respective displacer head.

4,363,253

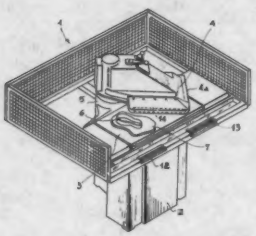
AUTOMATIC HOLLOW PUNCH RESEARCH DEVICE AND RELEVANT CONTROL, FOR DIE-CUTTING MACHINES, PARTICULARLY FOR FOOTWEAR PRODUCTION

Emiliano Cantella, Vigevano, Italy, assignor to Atom S.p.A., Vigevano, Italy

Filed Apr. 14, 1980, Ser. No. 140,087
Claims priority, application Italy, Apr. 27, 1979, 22220 A/79
Int. Cl.³ B26F *1/40*
U.S. Cl. 83—537 **3 Claims**

1. In combination, a die cutting machine particularly for cutting materials for footwear, said machine comprising a fixed faceplate on which the material to be cut is placed and a mobile head mounted for motion in a horizontal plane above substantially the entire surface area of said faceplate, said machine being of the type that uses separate hollow punches positioned by the operator on the material to be cut on said faceplate, means to cause said mobile head to move downwardly and upwardly towards and away from said faceplate, whereby said head will press a hollow punch through said material to cut said material when a hollow punch is located between said head and said material when said head makes a downward stroke, an element mounted on said mobile head for sensing a hollow punch therebelow as said head is moved in said horizontal plane, circuit means including said sensitive element for

controlling the horizontal and vertical motion of said head, and manual starting means for starting operation of said machine, said circuit means comprising means adapted to cause said head to move in a continuous and automatic cycle of operation wherein said head starts from a rest position, moves in a said horizontal plane until said sensitive element senses a hollow punch, stops the motion of said head in said horizontal plane after said head passes over said sensed hollow punch, causes said head to move down and then back up to said horizontal plane in a vertical cutting stroke, and then returns said head to said rest position, said sensitive element comprising an inductive surface switch arranged in bar form, means to mount said inductive bar switch on said head in such a way that said switch will sweep over substantially the entire surface of said faceplate as said head is moved in said horizontal plane during said cycle of operation, said circuit means comprising a pair of condensers, said sensitive element generating a signal from the time it first senses a said hollow punch until the time it passes over a said hollow punch, one of said condensers being of relatively large capacity, and the other of said condensers being of relatively small capacity, both of said condensers



being arranged in parallel circuits within said circuit means and arranged so that either one, upon discharging, will operate means to cause said head to cease its motion in said horizontal plane and to commence its motion in said vertical cutting stroke, and means to adjust the capacity of said condenser of relatively small capacity, whereby said large capacity capacitor will not discharge until said head has completely passed over punches of normal to larger than normal size, and whereby said adjusted capacity of said capacitor of relatively smaller capacity will cause stoppage of motion in the horizontal plane and initiation of a vertical cutting stroke when said sensitive element senses a punch of relatively small size, said machine comprising a vertically disposed upright on which said mobile head is mounted, means to cause said head to rotate about the axis of said vertically disposed upright, said sensitive element comprising inductive switch means mounted on the leading edge of said head as it rotates over said faceplate, and said circuit means comprising means to stop the rotation of said head over said faceplate only after said inductive switch means has passed over a said hollow punch on the material to be cut on said faceplate.

4,363,254

HORIZONTAL BANDSAW MACHINE

Tsuneo Aizawa, and Kenji Onishi, both of Isehara, Japan, assignors to Amada Company, Limited, Japan

Filed Dec. 29, 1980, Ser. No. 221,358

Claims priority, application Japan, Dec. 28, 1979, 54-170418

Int. Cl.[3] **B23D** *55/08;* **B27B** *13/10*

U.S. Cl. 83—800 **1 Claim**

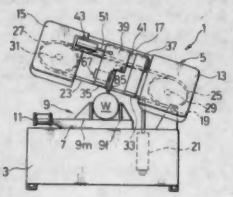
1. In a horizontal bandsaw machine, having a base means for supporting a workpiece to be cut at a cutting zone and a head assembly mounted for movement relative thereto, said head assembly comprising:

an endless bandsaw supported for movement at the head assembly;

a pair of means for guiding the endless bandsaw at the cutting zone;

means for carrying at least one of the pair of guiding means adjustably on the head assembly;

means, mounted on the head assembly, for detecting changes in the cross-sectional length of the workpiece to be cut at the cutting zone; and



means, controlled by the detecting means, for driving at least one of the carrying means;

whereby at least one of the pair of guiding means is automatically moved in conformance with detected changes in the cross-sectional length of the workpiece to be cut at the cutting zone.

4,363,255

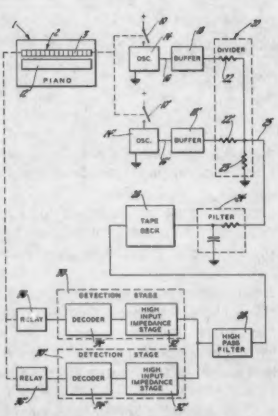
PIANO ACTION MAGNETIC TAPE RECORDING PROCESS AND APPARATUS FOR PLAYER PIANO PLAYBACK

Gary T. Brush, Sault Ste. Marie, Ontario, Canada (P6A 4J9) assignor to Sounds Aline Systems, Inc. Houston Lake, Mich.

Filed May 7, 1980, Ser. No. 147,489

Int. Cl.[3] **G10F** *1/00*

U.S. Cl. 84—1.03 **11 Claims**



1. A process for recording electric signals corresponding to a unique operation sequence of a set of keys that each have first and second positions comprising, in combination, the steps of generating a discrete frequency AC signal as each of said keys is switched from said first position to said second position; algebraically adding said AC signals; filtering the sum of said algebraic addition through a low pass filter so as to generate a filtered signal in which the energy level components of each AC signal are equal; and recording said filtered signal in a recording medium.

7. Apparatus for indicating operational sequence of a set of keys from a prerecorded signal in which operation of each of said keys between a first position and a second position is represented by an AC signal having a predetermined energy

level and a unique frequency, the energy levels of said AC signals being substantially equal, comprising, in combination, a high pass filter responsive to said prerecorded signal for generating a filtered signal that is the algebraic sum of each and energy AC signal component in said prerecorded signal; a plurality of frequency responsive detectors that are each responsive to one of said AC signal frequencies, said filter being connected to each of said detectors so as to enable each of said detectors to monitor said filtered signal; and a plurality of indicators that are each responsive to one of said detectors for indicating when one of said AC signals is detected by one of said detectors whereby operation of said keys between said first position and said second position is indicated.

4,363,256

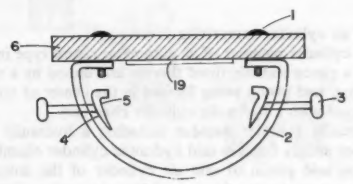
EASY FRET

Robert L. Smith, 1037 East Beddell St., Ft. Worth, Tex. 76115

Continuation-in-part of Ser. No. 960,955, Nov. 15, 1978, abandoned. This application Mar. 6, 1980, Ser. No. 127,588

Int. Cl.³ G10D *3/08*

U.S. Cl. 84—317 **4 Claims**



1. A manual, mechanical fretting device for fretted, stringed musical instruments, comprising:

a brace having a plurality of apertures formed therethrough;

means for adjustably clamping said brace to the neck of said stringed instrument, said clamping means holding said brace a fixed distance above the strings of said instruments;

a plurality of fretting means, each of said fretting means including a string deflecting element located below said brace and above said string, a pressure panel located above said brace, at least one bolt connecting said deflecting element and said pressure panel, said bolt passing through one of said apertures, and means for biasing said panel, bolt, and element upwardly away from said string; and

leverage means for facilitating depression of said pressure panels, said leverage means comprising: a stationary frame fixedly connected to said brace, a pair of fulcrum bars fixed to said frame, a pressure bar fixed to the end of said frame remote from said brace, and a plurality of pairs of leverage bars, each of said pair of leverage bars having one leverage bar fulcrumed on one of said fulcrum bars and the other leverage bar fulcrumed on the other of said fulcrum bars, an expandable joint connecting the ends of said leverage bars between said fulcrum bars, the unjointed end of said one leverage bar being located above said pressure bar and the unjointed end of said other leverage bar being located above said pressure panel, whereby manual pressure on said unjointed end of said one leverage bar will cause the unjointed end of said other leverage bar to depress its associated pressure panel, thereby fretting the stringed instrument.

4,363,257

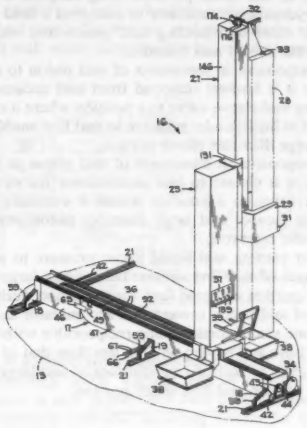
STRIKEDOWN SERVICE MECHANISM FOR A VERTICAL LAUNCHING SYSTEM

Robert M. Harris, New Hope, and Edward R. Betzold, Golden Valley, both of Minn., assignors to FMC Corporation, Chicago, Ill.

Filed May 28, 1980, Ser. No. 153,995

Int. Cl.³ F41F *3/04, 9/00*

U.S. Cl. 89—1.802 **27 Claims**



14. A service mechanism for a vertical missile launching system having an array of missile cannister housings wherein tracks are laid out on a surface adjacent the array of housings and a power receptacle is accessible on the surface, comprising a base including means adapted to engage the tracks so that said base may be moved over the surface on the tracks, a carriage supported on said base for movement therealong in a direction angularly disposed from the direction of the tracks, an upper portion on said carriage being movable in azimuth with respect to a lower portion, a cradle movably mounted on said carriage upper portion adapted to engage and transport a missile cannister between a receiving position and ones of the cannister housings, and means coupled to the power receptacle for moving said carriage and cradle to effect transport of the cannisters, said base, carriage and cradle being selectively movable relative to each other and the array to assume a stowed configuration.

4,363,258

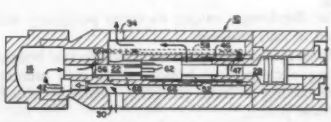
HYDRAULIC IMPACTOR

John Duff, Corbeil, Canada, assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 17, 1980, Ser. No. 141,023

Int. Cl.³ F01L *17/00, 25/04*

U.S. Cl. 91—165 **7 Claims**



1. A hydraulic impactor comprising:

a cylinder,

a hydraulic accumulator at one end of said cylinder,

a differential area piston reciprocable within said cylinder, said piston having a large diameter central portion and

reduced-diameter shank portions extending axially from its opposite sides,

said piston large diameter central portion having a first annular face at one end and a second annular face at the other end with said second annular face being disposed closer to said hydraulic accumulator than is said first annular face,

a first one of said shank portions being adapted to impart an impact to an anvil element,

a second of said shank portions being adapted to slide into said hydraulic accumulator to compress a fluid therein,

a sleeve valve surrounding said piston and reciprocable along the axis of said cylinder,

means responsive to movement of said piston to a position where it is farthest removed from said accumulator for moving said sleeve valve to a position where it connects a source of liquid under pressure to said first annular face of said large diameter piston portion,

means responsive to movement of said piston to a position where it is closest to said accumulator for moving said sleeve valve to a position where it connects said first annular face of said large diameter piston portion to a hydraulic reservoir,

means for causing said liquid under pressure to act on the total area of said first annular face of said large diameter piston portion and said first shank portion during movement of said piston toward said accumulator and

said second shank portion being reciprocable within a cylindrical bore and having an area less than that of the combined areas of said first annular face of said large diameter piston portion and first shank portion.

4,363,259

BRAKE BOOSTER

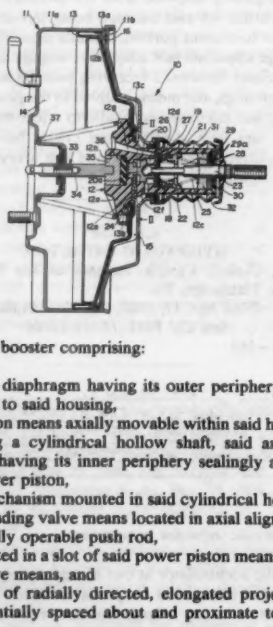
Atsushi Ohmi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 4, 1980, Ser. No. 137,815

Claims priority, application Japan, May 15, 1979, 54-59251

Int. Cl.³ F15B *9/08*

U.S. Cl. 91—422 **1 Claim**



1. A brake booster comprising:

a housing,

an annular diaphragm having its outer periphery sealingly attached to said housing,

power piston means axially movable within said housing and including a cylindrical hollow shaft, said annular diaphragm having its inner periphery sealingly attached to said power piston,

a valve mechanism mounted in said cylindrical hollow shaft and including valve means located in axial alignment with a manually operable push rod,

a key inserted in a slot of said power piston means to engage said valve means, and

a plurality of radially directed, elongated projections circumferentially spaced about and proximate to the inner periphery of said diaphragm, said projections being integrally formed on the surface of said diaphragm adjacent said housing and disposed to contact said housing to limit axial movement of said diaphragm in one direction, the distance between the adjacent projections being less than the width of said key such that the inner peripheral ends of at least two of said projections hold said key in position.

4,363,260

AIR CYLINDER

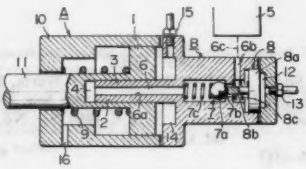
Yoshitaka Sakai, Nagoya, Japan, assignor to Sakai Manufacturing Co., Ltd., Nagoya, Japan

Filed Feb. 13, 1981, Ser. No. 234,181

Claims priority, application Japan, Mar. 19, 1980, 55-36622[U]

Int. Cl.³ F15B *15/26*

U.S. Cl. 92—13 **1 Claim**



1. An air cylinder comprising:

an air cylinder member of an automatic return type including a piston slidably fitted therein and biased by a return spring, said piston being formed in the center of one end thereof with a hydraulic cylinder chamber;

a hydraulic cylinder member including a hydraulic fixed piston snugly fitted in said hydraulic cylinder chamber to allow said piston of said air cylinder of the automatic return type to move freely in sliding movement relative to said hydraulic fixed piston;

an oil chamber defined between the end of said hydraulic fixed piston and the end of said hydraulic cylinder chamber;

a check valve automatically opening in response to movement of said slidably fitted piston in one direction and mounted in a communicating passageway connecting said oil chamber with an oil tank; and

pressing means for opening said check valve as desired.

4,363,261

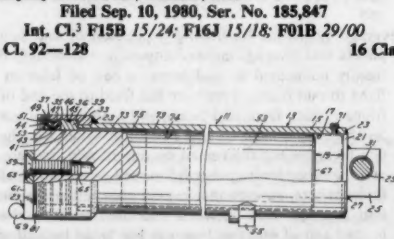
CYLINDER ASSEMBLY AND METHOD OF REPLACING SEALS AND BEARINGS

Mehar K. Mehta, Miami Springs, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed Sep. 10, 1980, Ser. No. 185,847

Int. Cl.³ F15B *15/24;* F16J *15/18;* F01B *29/00*

U.S. Cl. 92—128 **16 Claims**



1. A cylinder assembly comprising a cylinder open at one end and closed at the other end and having a bore and a bore extension therein;

a head secured upon said cylinder open end;

a gland assembly nested, sealed and retained within said head;

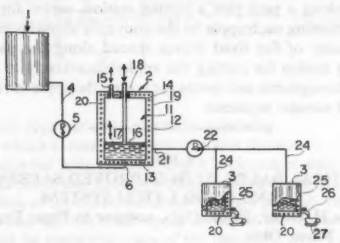
said gland assembly including a rod seal and rod wiper;
a piston rod reciprocally and guidably mounted within said cylinder bore and cooperatively extending through said seal and wiper;
said piston rod having a length less than the length of said head and cylinder;
and a thrust angle stop assembly mounted upon and secured to said piston rod and engageable with said head when said piston rod is manually retracted;
said thrust angle stop assembly being removable from said piston rod;
said piston rod being manually retractible into said bore extension and clearing said rod wiper and seal to facilitate removal and replacement of said wiper and seal.

4,363,262

APPARATUS FOR STORAGE AND DISPENSING COFFEE

Marion E. Pinckley, 801 E. Jefferson St., Louisville, Ky. 40206, and William G. Carlin, 1617 Speed Ave., Louisville, Ky. 40205

Filed Oct. 17, 1980, Ser. No. 198,170
Int. Cl.³ A47J *31/00*
U.S. Cl. 99—290 **13 Claims**



8. A coffee dispensing system, which comprises in combination:
A. a coffee brewing station;
B. a coffee storage receptacle in the form of a closed container and having a movable liquid-gas separation member mounted therein;
C. a coffee dispensing station;
D. conduit for transporting coffee from said coffee station to said coffee storage receptacle;
E. conduit for transporting coffee from the bottom of said storage receptacle to said coffee dispensing stations;
F. said liquid-gas separation member being floatingly disposed on the top of the level of brewed coffee in said container and vertically movable with the level of brewed coffee therein; and
G. vent means being located in the top of said container for the passage of air into and out of said storage receptacle upon the introduction and withdrawing of coffee therefrom.

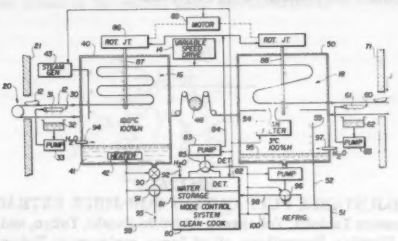
4,363,263

EFFICIENT HIGH HUMIDITY FOOD PROCESSING SYSTEM WITH SANITIZING IMPROVEMENTS

Charles E. Williams, Moorefield, W. Va., assignor to Hester Industries, Inc., Moorefield, W. Va.

Filed Jul. 26, 1979, Ser. No. 60,988
Int. Cl.³ A47J *37/00*
U.S. Cl. 99—352 **11 Claims**

1. A food processing system for heating and chilling unpackaged food products such as fish, meat, poultry and produce passing in sequence on a common conveyor belt through heating and chilling stations, comprising in combination,
a continuously running single conveyor belt passing commonly through food loading, cooking, chilling and unloading stations,
a heating chamber having a heating spiral conveyor belt path therethrough for carrying said unpackaged food products loaded at said loading station,
a chilling chamber separately disposed from said heating chamber having a cooling spiral conveyor belt path therethrough for carrying said unpackaged food products on said belt heated in said heating chamber to present chilled food products at said unloading station,
steam heat means for heating said products on said heating spiral with water carried solely in gaseous form in a steam



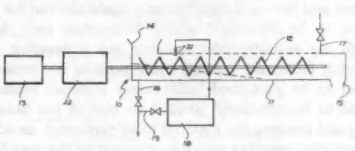
bath at a temperature approaching 100° C. and a humidity approaching 100% without loss of moisture and food essences in said unpackaged food products and,
a mechanically operable sanitizing system for said heating and chilling chambers including means for pumping and spraying detergent solutions inside the chambers over the spiral pathway of the conveyor belt therethrough wherein the mechanically operable sanitizing system includes rotatable spray nozzle means extending within the spiral belt paths respectively inside the heating and chilling chambers to rotate and scan the spray about the insides of the chambers, and means operating both the rotatable spray means in a cleaning mode simultaneously.

4,363,264

COUNTER CURRENT DIFFUSION EXTRACTOR

Timothy R. Lang, Pymble, and Donald J. Casimir, Killara, both of Australia, assignors to Howden Equipment Services Pty. Ltd., Sydney and Commonwealth Scientific and Industrial Research Organisation, Campbell, both of, Australia

Filed Sep. 29, 1980, Ser. No. 192,130
Claims priority, application Australia, Feb. 15, 1980, PE2383; Jul. 7, 1980, PE4410
Int. Cl.³ A23N *1/00*
U.S. Cl. 99—510 **8 Claims**



1. A counter current extractor comprising: an elongate housing in the form of a trough or tube and having an inlet at or adjacent one end and an outlet at or adjacent the other end, the longitudinal axis of the housing being inclined upwardly from the one end to the other end, a screw conveyor having at least one substantially helical flight disposed within the housing and rotatable about its longitudinal axis for moving material to be extracted, which has been introduced into the housing through the inlet, from the said one end to the said other end of the housing, means for introducing an extracting liquid into the

said other end of the housing in a manner such that introduced fluid will flow down the housing to the one end thereof and in counter current with the material being extracted, drive means for causing the screw conveyor to rotate and for causing the direction of rotation of the screw conveyor to be intermittently reversed while providing a net forward motion of material to be extracted from the one end to the other end, and means being provided for withdrawing extracting liquid from the housing at a point at or adjacent the one end thereof, for heating the withdrawn liquid, and for returning the heated liquid into the housing such that the returned heated liquid will contact the material being extracted.

4,363,265

ADJUSTABLE PULP OUTLET FOR JUICE EXTRACTOR

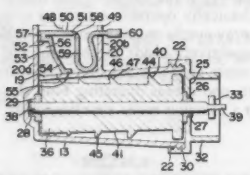
Susumu Tanioka, Yokohama; Akiyoshi Sasaki, Tokyo, and Shozi Hoshino, Sagamihara, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 268,004

Claims priority, application Japan, May 31, 1980, 55-75282[U]; May 31, 1980, 55-75283[U]

Int. Cl.³ A23N *1/02*

U.S. Cl. 99—510 **7 Claims**



1. An apparatus for separating liquid and residual matter from a material comprising a case having upper, lower and lateral sides and opposite end walls and having a bore with an inner peripheral surface, said case being provided on the upper side with a material inlet opening communicating with said bore, with a juice outlet opening on the lower side having a filter and communicating with said bore, and with a residual matter outlet opening formed on one lateral side and communicating with said bore, a rotary member rotatably mounted in said bore and having a spiral cutting blade portion for cutting material to be processed which is inserted into the bore through the material inlet opening and a pressing portion continuing from said cutting blade portion for pressing the material to be processed, said rotary member feeding said material to be processed toward an end of the bore while cutting and pressing the material to be processed, an adjusting open and close member which is arranged on the outside of the bore adjacent the residual matter outlet opening and movable between one position wherein it effects substantial closure of said residual matter outlet opening and another position wherein it effects opening of said residual matter outlet opening, said member defining an exit opening smaller in area than said residual matter outlet opening through which residual matter can flow when said member is in its one position, and biasing means operatively connected to said member to bias said member toward said one position, said member being urged by pressure of residual matter discharged from said residual matter outlet opening to effect opening of the residual matter outlet opening.

4,363,266

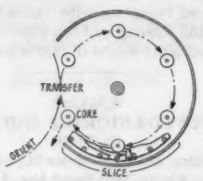
MACHINE FOR SLICING UNPEELED APPLES INTO RINGS

Oldrich J. Tichy, Concord, and Iraj Teranchi, Glen Ellen, both of Calif., assignors to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed Oct. 7, 1980, Ser. No. 194,777

Int. Cl.³ A23N *3/00, 4/14*

U.S. Cl. 99—545 **6 Claims**



1. A machine for cutting an apple into annular segments including a conveyor for moving an unpeeled apple continuously along a path past a cutting station, means for continuously rotating each apple on the conveyor about its major axis, a plurality of flat fixed knives spaced along the path at the cutting station for cutting the apple transversely to its major axis into segments and means for coring the apple to release the several annular segments.

4,363,267

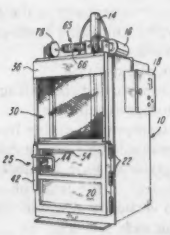
VERTICAL BALER WITH IMPROVED SAFETY GATE AND DOOR LATCH SYSTEM

Charles H. Greer, Piqua, Ohio, assignor to Piqua Engineering, Inc., Piqua, Ohio

Filed Dec. 29, 1980, Ser. No. 220,900

Int. Cl.³ B30B *15/00*

U.S. Cl. 100—255 **7 Claims**



1. In a baler adapted for compacting scrap material and including a vertical housing having opposite side walls connected by a rear wall and a top wall and defining a compacting chamber having a front opening, a door member supported for pivotal movement between an open position and a closed position covering a lower portion of said front opening, latch means for securing said door member in said closed position, a gate member supported for movement between a retracted position providing for adding successive batches of material over said door member and a closed position covering an upper portion of said front opening, a power operated generally horizontal platen movable vertically within said chamber between a retracted upper position and a lower position for compacting the material within said chamber into a bale, the improvement wherein said latch means comprise a first latch member including a handle portion, pivot means connecting said first latch member to said housing adjacent one of said side walls and providing for moving said first latch member be-

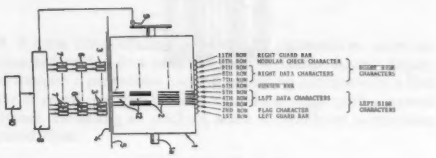
tween a released position for opening said door member and a clamped position where said first latch member clamps said door member to said housing, a lever actuated member supported by said door member for rotation on an axis extending substantially parallel to said door member, a second latch member connected to said lever actuated member for pivotal movement eccentric to said axis of rotation, and said second latch member being movable between an outer released position engagable with said first latch member and a retracted locked position locking said first latch member in said clamped position in response to rotation of said lever actuated member.

4,363,268

DRUM TYPE BAR CODE LINE PRINTER

Yo Sato, Tokyo, and Tooru Shibayama, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Jul. 17, 1980, Ser. No. 169,750
Claims priority, application Japan, Jul. 19, 1979, 54-90920
Int. Cl.³ B41J *5/00*
U.S. Cl. 101—110 **11 Claims**



1. A drum type bar code printer, comprising:

a drum which is rotatable about the axis thereof;

imprintable bar code types arranged in circumferential rows around the drum; the rows being arrayed along the axial direction of the drum; the drum having a plurality of axial lines, and the bar code types in all of the rows being arrayed on respective ones of the lines;

each bar code type having opposite ends along the axial direction of the drum; each bar code type being comprised of a plurality of modules in series along the axial direction of the drum; each bar code type being comprised of an imprintable black bar portion occupying a first respective plurality of the modules of that type and a non-printable portion occupying a second respective plurality of the modules of that type, with these black bar and non-printable portions of each bar code type being arranged next to each other along the axial direction of the drum;

the bar code types in any of the lines thereof being arranged so that a non-imprintable area is defined, between two of the bar code types, the area essentially corresponding in width along the axial direction of the drum to a first predetermined number of modules of a bar code type, and the area being adjacent to that end of each of the bar code types in that line where any of the first plurality of modules is within a second predetermined number of modules from that end of that type.

4,363,269

INDEX WHEEL FOR PRINTING DEVICE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Mar. 30, 1981, Ser. No. 248,691
Claims priority, application Japan, Apr. 2, 1980, 55-43200[U]
Int. Cl.³ B41J *1/32*
U.S. Cl. 101—110 **15 Claims**

1. An index wheel for a printing device, wherein the printing device comprises:

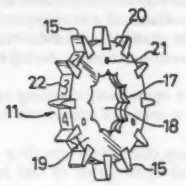
a type wheel; means mounting the type wheel for rotation about the axis thereof; the type wheel having a first outer circumference; a plurality of type bearing first lands defined on the first outer circumference of the type wheel; a plurality of grooves defined in the first outer circumference, with a groove being formed between adjacent ones of the first lands;

the printing device further comprising the index wheel;

means mounting the index wheel for rotation about its axis, and the index wheel axis being different than the type wheel axis; the index wheel being engageable with the type wheel for rotationally driving the type wheel;

the index wheel comprising;

a toothed wheel member having a body with a second outer circumference; a plurality of teeth being defined on a second outer circumference, and the teeth being circumferentially spaced apart such that each tooth is engageable with a groove of the type wheel; each tooth extending out from a root at the second outer circumference;



a printed wheel member including a body and a plurality of second lands for defining a third outer circumference of the printed wheel member body; the second lands being circumferentially spaced by the distance of the roots of adjacent teeth on the tooth wheel member;

index characters borne on the second lands, the index characters being printed on the second lands; and

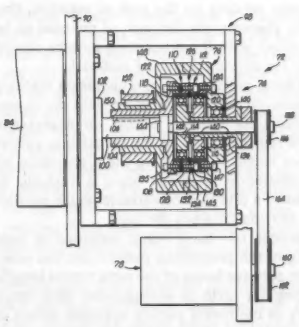
retaining means for retaining the toothed wheel member and the printed wheel member in side-by-side relationship for defining the entire index wheel, and such that the second lands are fitted into the spaces between the teeth of the toothed wheel member.

4,363,270

HARMONIC PHASING DEVICE FOR PRINTING PRESS

Frank Ury, Olpe; Howard L. Propheter, and Carlton A. Bird, both of Emporia, all of Kans., assignors to Didde Graphic Systems Corporation, Emporia, Kans.

Filed Sep. 24, 1980, Ser. No. 190,272
Int. Cl.³ B41F *5/06, 13/14*
U.S. Cl. 101—180 **8 Claims**



1. A web-handling station, comprising:

a pair of elongated, axially rotatable rollers;

first motive means for rotation of said rollers;

transmission and phasing apparatus for coupling said first motive means and said rollers, and for selectively changing the phase of at least one of said rollers, including

a 1:1 gear ratio phasing device having first and second, rotatable, coaxial, juxtaposed harmonic drive gears each including an elliptical wave generator, a flexible, toothed, rotatable spline disposed about said wave generator, and a first-rigid, rotatable toothed spline about said flexible spline and for engagement therewith;

a second, rigid rotatable spline briding said first and second harmonic gears and disposed for simultaneous meshing engagement with the flexible spline of each harmonic gear;

selectively operable second motive means; and

means coupling said second motive means and the wave generator of one of said harmonic gears for rotation of the coupled wave generator to effect said phase change upon operation of said second motive means, including means for selectively and intermittently operating said second motive means only in response to the need to effect said phase change, and for maintaining said coupled wave generator stationary during normal rotation of said rollers;

drive input structure operatively coupling said first motive means and the first spline of one of said harmonic gears; and

drive output structure operatively coupling said one roller and the first spline of the other of said harmonic gears, including first and second gears respectively secured to said rollers, said first and second gears being in meshed, driving engagement and having a gearing ratio for driving said rollers at the same surface speed.

4,363,271

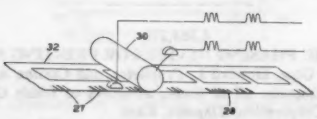
PATTERN REGISTRATION CONTROL BARS

Robert L. Horst, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 40,033, May 17, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,004

Int. Cl.³ B41F *13/24*

U.S. Cl. 101—181 **1 Claim**



1. An apparatus for controlling the register between a pattern about to be placed upon a web of material and a pattern which is already existing on the web of material, the pattern which is to be placed upon the web of material to be placed thereon in register with the preexisting pattern comprising:

(a) a means for moving a web of material,

(b) a preexisting pattern with a registration marking on the web of material and a new pattern with the same registration marking on a rotary means for applying the new pattern in registration with the preexisting pattern,

(c) a scanner means for scanning the registration markings,

(d) said registration markings being a variable bar mark composed of a plurality of variable width parallel bars of variable spacing between the bars,

(e) said variable bar mark being provided at least at the beginning of the preexisting pattern and the new pattern, with both patterns being of the same repeat length and the mark being set forth in arrangement only once on the periphery of the rotary pattern applying means such that there can only be match-up in the registration marks when the pattern to be placed on the web of material and the preexisting pattern are in exact registration, and

(f) means connecting the scanning means and the means moving the web so that the registration markings sensed may affect the means moving the web for controlling register.

4,363,272

DEVICE FOR AN ELECTRIC IGNITER

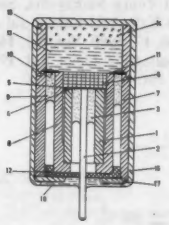
Björn Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Division of Ser. No. 895,406, Apr. 10, 1978, Pat. No. 4,239,005. This application Dec. 7, 1979, Ser. No. 101,400

Claims priority, application Sweden, Apr. 19, 1977, 7704436

Int. Cl.³ F42C *11/00*

U.S. Cl. 102—202.13 **9 Claims**



1. Electric ignition apparatus for igniting a pyrotechnical ignition charge at particular time delays after a triggering voltage is applied, comprising:

at least one pyrotechnical delay charge for burning at a particular rate after being ignited and having dimensions defining a particular time delay;

ignition means for igniting said pyrotechnical delay charge in response to an applied voltage at least equal to a first triggering voltage level, said delay charge burning to ignite said pyrotechnical ignition charge in a delayed manner, and for igniting both said pyrotechnical ignition charge and said pyrotechnical delay charge in response to an applied voltage at least equal to a second triggering voltage level, said ignition means comprising:

a first unit of electrically conductive material, said first unit having a first end surface;

a second unit of electrically conductive material, said second unit having a second end surface and being disposed inside of said first unit;

a first insulating body disposed between said first and second units, said first insulating body having a third end surface;

a first heating element electrically connecting said first and second units, said first heating element being supported on said first, second and third end surfaces in contact with said pyrotechnical delay charge;

a third unit of electrically conductive material, said third unit having a fourth end surface;

a fourth unit of electrically conductive material, said fourth unit having a fifth end surface and being disposed inside said third unit, said fourth unit also being disposed around and electrically connected to said first unit;

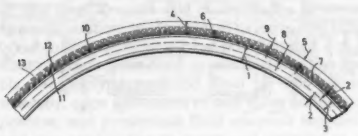
a second insulating body disposed between said third and fourth units, said second insulating body having a sixth end surface; and

a second heating element electrically connecting said third and fourth units, said second heating element being supported on said fourth, fifth and sixth end surfaces in contact with said ignition charge.

4,363,273
AMMUNITION WITH PROTECTIVE SURFACE LAYER AND METHOD OF MAKING SAME

Manfred Luebben, Celle, and Wolfram Witt, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 885,323, Mar. 10, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 112,110
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710451
Int. Cl.³ F42B *5/18*
U.S. Cl. 102—431 14 Claims

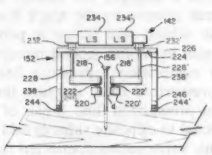


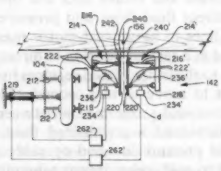
1. Porous nitrocellulose combustible ammunition cartridge permeated with a first polymer, said cartridge having deposited thereon a protective coating including successively a first layer of metal particles bonded to said cartridge with a second polymer containing air pockets, and a second layer comprising a cured resin.

4,363,274
CENTER LINE FOLLOWER

Raymond R. Lund, West Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.

Continuation of Ser. No. 951,131, Oct. 13, 1978, abandoned. This application Jan. 23, 1981, Ser. No. 227,975
Int. Cl.³ E01B *29/00*
U.S. Cl. 104—2 12 Claims



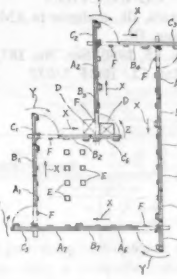


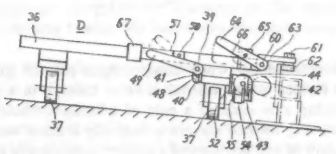
2. A rail mounted machine provided with a main frame and a secondary frame mounted for lateral movement on the main frame, the secondary frame carrying two similar track operating means for carrying out a specific operation at two respective lateral locations relative to the centre line of the track, means for moving the secondary frame laterally relative to the main frame to position the track operating means at the respective lateral locations, and a centre line follower connected to said moving means and having a housing having an open bottom, two spaced sliders contained in the housing and extending generally longitudinally relative to the main frame for sensing individual members of a row of discrete, spaced members on ties along the predetermined centre line of the track which is independent of the rails of the track on which said machine is mounted, said housing having sides extending downwardly for engaging the ties, the lower edges of said sliders being slightly above the lower edges of said sides, and said sides being longer than the spacing between ties, means mounting each slider on the housing for relative movement in a direction towards and away from the other slider, means biasing the sliders to a relatively proximate position in which the sliders define a longitudinal channel of predetermined width and location, and means deriving electrical signals which indicate which slider has been moved laterally away from the proximate position.

4,363,275
CONVEYOR SYSTEM AND VEHICLE FOR USE THEREIN

Kazusuke Kaji, Kawasaki, Japan, assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 11, 1980, Ser. No. 215,581
Claims priority, application Japan, Dec. 18, 1979, 54-165100
Int. Cl.³ B61B *13/12*
U.S. Cl. 104—166 6 Claims





1. A driverless vehicle comprising a horizontally disposed base supported by wheels therebelow which are adapted to ride on a floor, guide rollers supported by the base and projecting from one side of the base for contact with a guide, at least one drive wheel at an elevation above the elevation of the axis of said wheels and being supported by the base adjacent said one side of the base, control means for oscillating said drive wheel about a generally horizontal axis between a drive position and an accumulation position, and means on the base for selectively moving the drive wheel generally horizontally between an operative position wherein it can frictionally contact a rotating drive shaft to be disposed alongside the base and an inoperative position wherein it is out of contact with a drive shaft.

6. A conveyor system comprising a plurality of aligned drive shafts, frame sections supporting said shafts at an elevation above a floor, one of said shafts being supported by a frame section oscillatable through an arc of 90° about a vertical axis for alignment with each of two mutually perpendicular frame sections, a driverless vehicle having a horizontally disposed base supported by wheels therebelow which ride on said floor, guide rollers supported by the base and projecting from one side of the base for contact with a guide supported by said frame sections, at least one drive wheel at an elevation above the elevation of the axis of said support wheels, said drive

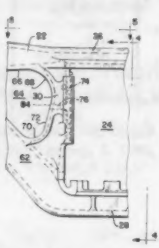
wheel being supported by the base adjacent said one side of the base, control means for oscillating said drive wheel about a generally horizontal axis between a drive position and an accumulation position, means on the base for selectively moving the drive wheel generally horizontally at said elevation between an operative position wherein it can frictionally contact said drive shaft and an inoperative position wherein it is out of contact with said drive shafts, means on said oscillatable frame section for selectively actuating said control means on the base to cause a vehicle moving therealong to accumulate, and said vehicle support wheels being caster wheels so that the vehicle may oscillate with the last-mentioned frame section.

4,363,276

RAILROAD CAR TRUCK SIDE FRAME - BOLSTER CONNECTION

Otto W. Neumann, Itasca, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 15, 1980, Ser. No. 187,586
Int. Cl.³ B61F *5/052*
U.S. Cl. 105—197 R **1 Claim**



1. A railroad car truck comprising a pair of spaced side frames formed with pedestal jaws to receive in a journaled relationship axle ends of a pair of wheelsets, each said side frame having formed therein a centrally located window for disposition of end portions of a bolster transversely positioned between said side frames, an upper compression member and a lower tension member, spaced side frame columns joining said compression and tension members to define said side frame window, two wear plates each fastened to an inner side of each said side frame column,

spaced side frame inner and outer end walls joining outer sides of said side frame columns,

an opening formed in each said end wall with each said opening defined in part by an inner edge portion positioned in proximate alignment with said side frame column, and

a horizontal support rib formed on each of said column outer sides with said rib having ends joining said side frame inner and outer end walls so as to minimize torsion twisting,

said horizontal support rib having an outer edge defined by a middle portion positioned in substantial alignment with said side frame column wear plate and radiused ends joined to said middle portion with an outer end point of each radiused portion joined to said side frame inner and outer end wall opening edges,

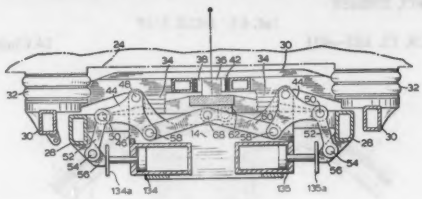
wherein said side frame columns tend to remain substantially aligned during rotation of said bolster with respect to said side frames to cause contact therebetween with said wear plates remaining substantially flat to provide a substantial area of contact with friction shoes carried by said bolster.

4,363,277

STABILIZING HIGH SPEED RAILWAY TRUCK SAFETY DEVICE

Henry Martin, Hamilton, and Charles R. Thompson, Lynden, both of Canada, assignors to Dofasco Inc., Hamilton, Canada

Filed May 13, 1980, Ser. No. 149,367
Int. Cl.³ B61F *3/08, 5/20, 5/24*
U.S. Cl. 105—201 **11 Claims**



1. For use in a railway truck assembly comprising:

a frame;

at least two wheel and axle assemblies mounted by the frame and on which the vehicle runs;

a bolster member mounted on the frame and adapted to support a vehicle body thereon for pivoting and tilting movement relative to the frame;

mounting means connecting the bolster member and the frame for the said tilting movement of the bolster member relative to the frame;

first motor means connected between the bolster member and the frame and operative upon the supply of power thereto from a power source to produce the said tilting movement therebetween; and

a safety device comprising hydraulic second motor means mounted by the frame and operable between a first condition in which it engages the bolster member to inhibit tilting thereof relative to the truck frame and a second condition in which said tilting is permitted; a control circuit for said hydraulic second motor means, said control circuit comprising a pressure line connected to a source of pressurized fluid, a return line connected to a sump for the pressurized fluid, a pair of hydraulic service lines connected to opposite sides of said hydraulic second motor means, valve means connected to said service lines and said pressure and return lines and operable in a first position to direct fluid from said pressure line to one of said service lines to move said motor means to said first condition and in a second position to direct fluid from said pressure line to the other of said services lines to cause said motor means to move to said second condition, control means to move said valve means between said first and second positions and a pressurized fluid reservoir connected to said pressure line and operable to supply pressurized fluid to said valve means whereby, upon movement of said valve means to said first position, said pressurized fluid reservoir supplies fluid to said one service line to move said motor means to said first condition.

10. For use in a railway truck assembly comprising:

a frame;

at least two wheel and axle assemblies mounted by the frame and on which the vehicle runs;

a bolster member mounted on the frame and adapted to support a vehicle body thereon for pivoting and tilting movement relative to the frame;

mounting means connecting the bolster member and the frame for the said tilting movement of the bolster member relative to the frame; and

first motor means connected between the bolster member and the frame and operative upon the supply of power thereto from a power source to produce the said tilting movement therebetween;

a safety device comprising hydraulic second motor means

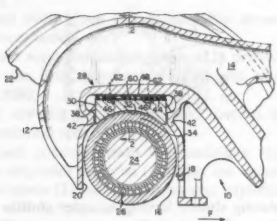
mounted by the frame and operable between a first condition in which it engages the bolster member to inhibit tilting thereof relative to the truck frame and a second condition in which the said tilting is permitted; the safety device including a control circuit for said hydraulic second means, said control circuit comprising a pressure line connected to a source of pressurized fluid, a return line connected to a sump for the pressurized fluid, a pair of hydraulic service lines connected to opposite sides of said hydraulic second motor means, valve means connected to said service lines and said pressure and return lines and operable in a first position to direct fluid from said pressure line to one of said service lines to move said motor means to said first condition and in a second position to direct fluid from said pressure line to the other of said service lines to cause said motor means to move to said second condition, control means to move said valve means between said first and second positions and a pressurized fluid reservoir connected to said pressure line and operable to supply pressurized fluid to said valve means whereby, upon movement of said valve means to said first position, said pressurized fluid reservoir supplies fluid to said one service line to move said cylinder to said first condition, said pressurized fluid reservoir including a variable volume fluid receiving chamber and biasing means to reduce the volume of said chamber to a minumum.

4,363,278

RESILIENT RAILWAY TRUCK BEARING ADAPTOR

Harry W. Mulcahy, Griffith, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Sep. 11, 1980, Ser. No. 186,218
Int. Cl.³ B61F *5/30, 5/52, 15/02*
U.S. Cl. 105—218 R **2 Claims**



1. A connection arrangement for joining an axle end to a side frame pedestal jaw of a railroad car truck wherein said axle end is journaled in a bearing positioned within said pedestal jaw, said arrangement comprising,

an adapter means carried on an upper portion of said bearing, said means including spaced downward depending semicircular side members to interact with ends of said bearing and prevent relative movement thereof, end walls each having a vertical recess formed therein joining said side member, and a substantially flat top surface containing indentations,

an elastomeric device comprising an elastic pad affixed between spaced lower and upper plates to cushion relative horizontal movements of said plates and maintain said movements within set limits, said upper plate and said lower plate having indentations on the upper surface thereof and having downwardly extending bases on lower surfaces thereof said lower plate downwardly extending bosses fitting with said adapter means top surface indentations upon said device being disposed on said adapter top surface, and

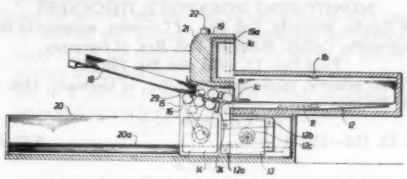
said side frame pedestal jaw defined by a substantially flat roof joined by end walls spaced to receive said adapter therebetween with a loose fit, each said pedestal jaw end wall carrying an outwardly projecting rib to fit within said adapter end wall recess with a loose fit, said pedestal jaw roof having downwardly projecting bosses fitting with complementary indentations of said elastomeric device upper plate upon said axle end, said adapter, and said elastomeric device being disposed in said pedestal jaw.

4,363,279

METHOD OF POSITIVELY CONTROLLING, STORING AND TRANSPORTING BANKNOTES, AND A SAFETY CASSETTE AND BANKNOTE-INFEED UNIT FOR CARRYING OUT THE METHOD

Sven L. Johansson, Stockholm, Sweden, assignor to Innovationsteknik, Stockholm, Sweden

PCT No. PCT/SE79/00211, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00887, PCT Pub. Date May 1, 1980
PCT Filed Oct. 19, 1979, Ser. No. 199,783
Claims priority, application Sweden, Oct. 20, 1978, 7810981
Int. Cl.³ G07D *9/00*; G07F *9/06*; E05G *1/00, 1/12*
U.S. Cl. 109—29 **10 Claims**



1. A method of providing safe control, storage and transport of banknotes when using a closeable cassette provided with a lock means and being of the kind which includes a container which has safety means with an electric circuit which is arranged, when an attempt is made to force the cassette open, to ignite a detonator causing a dye container or like element to rupture to thereby render the banknotes unusable, characterized by:

releasably connecting the cassette to a separate infeed unit, which is preferably provided with a counter, while exposing an infeed opening;

at least partially inserting an associated infeed and packing means (12) of the infeed unit into the infeed opening of the cassette;

introducing banknotes or other valuable sheets into the cassette;

releasing the at least partially filled cassette from the infeed unit while closing said opening and priming said safety means; and

transporting the cassette to a collecting station, e.g. a bank, where an authorized person equipped with a key or having knowledge of the code for unlocking the cassette, empties the cassette of its contents.

4,363,280

SEWING MACHINE ATTACHMENTS

Carl Lindquist, Lake Ariel, PA, assignor to Pennsylvania Sewing Research Corp., Lake Ariel, Pa.

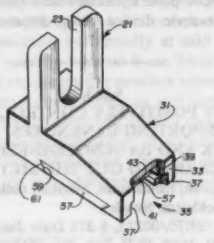
Filed Aug. 11, 1980, Ser. No. 176,914
Int. Cl.³ D05B *3/18*
U.S. Cl. 112—105 **7 Claims**

1. A sewing machine attachment for locating and holding a magnetizable accessory in a predetermined position for sewing comprising

(a) a substantially horizontal-extending positioning member having an open cavity therein, at least a portion of the walls of said cavity defining a seat for said accessory

(b) and magnetic means within said positioning member for

producing a magnetic flux which extends from said seat through the opening of said cavity,



characterized in that at least a portion of one wall of said cavity is removably mounted on said positioning member.

4,363,281

SEWING-MACHINE SYSTEM FOR CONTINUOUSLY MONITORING WORKPIECE THICKNESS

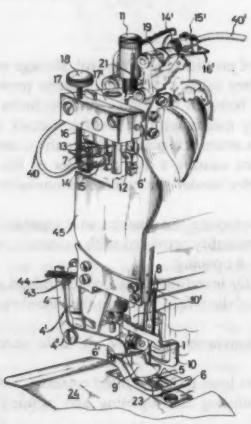
Kurt Reinke, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

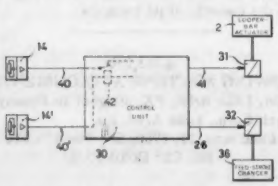
Filed Oct. 17, 1980, Ser. No. 198,148

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942166

Int. Cl.³ D05B *19/00*

U.S. Cl. 112—121.11 **6 Claims**





1. In a sewing machine provided with a frame and a stitch plate, a bottom feeder below a workpiece-supporting surface of said stitch plate intermittently rising through a slot thereof to advance a workpiece resting thereon, a needle bar vertically oscillatable on said frame in synchronism with said bottom feeder for stitching said workpiece, drive means for operating said bottom feeder and said needle bar, a presser foot with a stem vertically slidable in said frame and spring-urged from above against said workpiece during operation of said drive means, and control means for activating ancillary equipment in the presence of a workpiece below said presser foot exceeding a predetermined thickness,

the improvement wherein said control means comprises:

position-sensing means coacting with said presser foot for continuously monitoring the thickness of a workpiece entrained by said bottom feeder;

switching means responsive to a signal from said position-scanning means for activating said ancillary equipment upon detection of a rise of said presser foot to a predetermined level above said surface; and

inhibiting means responsive to said drive means for deactivating said position-sensing means whenever said bottom feeder projects above said surface.

4,363,282

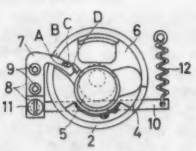
DEVICE FOR RETAINING INNER SHUTTLE MEMBER AGAINST ROTATION

Yoshinori Satake, 1-13-31, Santanda-cho, Amagasaki-shi, Hyogo-ken, Japan

Filed Jul. 15, 1980, Ser. No. 169,188

Int. Cl.³ D05B *57/08, 57/26*

U.S. Cl. 112—184 **2 Claims**



1. In a rotating shuttle having an outer shuttle **(2)**, mounted on a base **(1)**, having a shaft **(3)** carrying a cam **(5)** thereon and bobbin case member **(6)** rotatably fitted in the outer shuttle **(2)**, in combination:

(a) a side wall **(A)** defining a circular arc contact face extending inwards from the outer periphery of the bobbin case member **(6)** to a terminal end;

(b) a thread passing large diameter point **(D)** formed at said terminal end;

(c) a lever **(10)** attached to said base **(1)**, with a pivot **(11)**, at one end outside the periphery of said outer shuttle **(2)**, a retainer support plate **(9)** at said pivot one end connected to said lever **(10)**, an elongated bobbin case retaining member **(7)**, coupled at one end to said lever **(10)** extending inwards, said retaining member **(7)** having an acting side face **(B)** opposed to said side wall **(A)**, spring means **(12)** biasing said lever **(10)** into contact with said cam **(5)**.

(d) an engaging edge **(4)** formed in the outer shuttle **(2)**; and,

(e) a recess in one of said members **(6, 7)** at about the mid-portion of said elongated retaining member **(7)**;

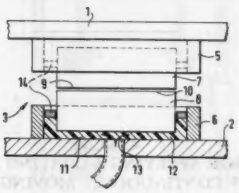
whereby said edge **(4)** can capture a thread to form a loop **(13)** which advances along the outer periphery of the bobbin case member **(6)** with the rotation of said outer shuttle **(2)** until the thread enters said recess to be finally released as said recess forms a space between the retaining member **(7)** and the large-diameter portion **(D)**.

4,363,283

SUPPORTING PAD FOR HATCH COVERS OF SHIPS

Hans P. Tietgen, Seevetal, and Gunter Riese, Hamburg, both of Fed. Rep. of Germany, assignors to Bastian Belzona Verfahrenstechnik, Wolfgang Bastian, Hamburg, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,719
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006504
Int. Cl.³ B63B *19/26*
U.S. Cl. 114—201 R 10 Claims



1. A supporting pad for a hatch cover of a ship, having a pair of bearing blocks provided with cooperating bearing surfaces and arranged respectively at the rim of a hatch of the ship and at the rim of the hatch cover, a relative movement being performable between the hatch and the hatch cover in a glide plane defined by the bearing surfaces, said supporting pad comprising

(a) a first receptacle (6,106) firmly connected to the ship;

(b) a first slide block (8,108) displaceably arranged in the first receptacle;

(c) a second receptacle (5) firmly connected to the hatch cover (1);

(d) a second slide block (7) displaceably arranged in the second receptacle;

(e) a variable accommodation space (11) provided at least between the first receptacle (6,106) and the first slide block (8,108);

(f) an inlet opening (13,113) oriented toward the variable accommodation space (11), and

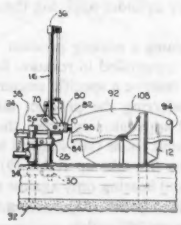
(g) pump and conduit means for feeding a volume-stable curable composite material (12) into the variable accommodation space (11) for displacing and adjusting said slide block in said receptacle.

4,363,284

DOCK-SIDE BOAT COVER

William E. Monroe, R.R. #3, Box 386, Syracuse, Ind. 46567

Filed Jan. 15, 1981, Ser. No. 225,351
Int. Cl.³ B63B *17/02*
U.S. Cl. 114—361 12 Claims



1. A cover for protecting the interior of a boat from the surrounding environment, said boat being in the water and secured to a dock, the improvement comprising:

a first vertical support connected to the dock;

a first bracket having a first roller bearing member that engages said first vertical support and a second roller bearing member that engages said first vertical support at a position substantially opposite said first roller bearing member;

a second vertical support connected to the dock;

a second bracket having a third roller bearing member that engages said second vertical support and a fourth roller bearing member that engages said second vertical support at a position substantially opposite said third roller bearing member;

a first arm connected to said first bracket and having an end that extends over the water in a plane substantially perpendicular to said first vertical support;

a second arm connected to said second bracket and having an end that extends over the water in a plane substantially perpendicular to said second vertical support;

a canopy secured to said ends of said first and second arms, said canopy acting through said arms to develop a moment that causes said first, second, third and fourth roller bearing members to engage said first and second vertical supports and hold said first and second arms in said perpendicular plane; and

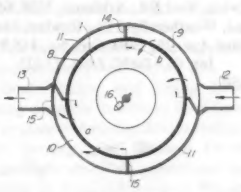
means for moving the first and second brackets with respect to the first and second vertical supports to correspondingly move the canopy from a first position, where the canopy surrounds that portion of the boat out of the water, to a second position, which allows unhampered ingress and egress between the dock and the boat.

4,363,285

DEVICE FOR COATING GRANULAR SOLIDS

Kazuyuki Yoshida, Fujieda; Shizuo Kaneko; Mikio Okawara, both of Shizuoka, and Terushige Hiroki, Shimada, all of Japan, assignors to Ohkawara Mfg. Co., Ltd., Tokyo and Daiichi Seiyaku Company, Limited, Shizuoka, both of, Japan

Filed Aug. 19, 1980, Ser. No. 179,668
Claims priority, application Japan, Sep. 6, 1979, 54-114848
Int. Cl.³ B05C *5/00*
U.S. Cl. 118—19 3 Claims



1. A rotary drum type device for coating granular solids comprising

a drum with a perforated cylindrical section,

a supporting ring surrounding said perforated cylindrical section for rotatably supporting said drum,

inlet duct means and outlet duct means defined in said supporting ring and being open to said perforated cylindrical section of said drum in such a way that gas is directed from the top of said drum toward a tumbling bed of granular solids formed in said drum and exhausted from the bottom of said drum through said tumbling bed of granular solids formed in said drum, said inlet duct means and said outlet duct means being diametrically opposed,

an inlet pipe connected to said inlet duct means,

a prime mover for rotating said drum,

spray means disposed within said drum for spraying a coating liquid,

said perforated cylindrical section of said drum being divided into a first area which is only in communication with the opening of said inlet duct means and a second area which is only in communication with the opening of said outlet duct means, such that different areas of said

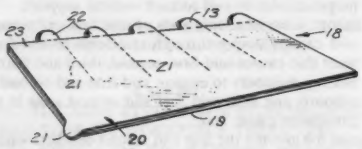
perforated cylindrical section operate in conjunction with said inlet means and said outlet means of the supporting ring, respectively.

4,363,286

FINGER-PRINTING PACKET

Larry J. Leavitt, 3854 S. Parkway #3A, Northbrook, Ill. 60062, and John E. Madigan, Arvada, Colo., assignors to Larry Leavitt, Northbrook, Ill.

Filed Jun. 12, 1981, Ser. No. 273,228
Int. Cl.³ B41K 1/00
U.S. Cl. 118—31.5 1 Claim



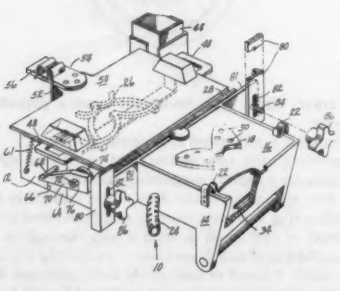
1. A fingerprinting packet, comprising, in combination, a rectangular-shaped, inked sheet, against which fingers are impressed so as to form fingerprints thereupon, and a same-shaped foil cover adhered to an inked side thereof, an arcuate cut-out at one corner of said inked sheet, a projecting finger tab on a corresponding corner of said foil cover; said finger tab being at a corner of a first side edge of said foil cover which is opposite a foil second side edge having a plurality of spaced-apart tabs, a row of perforations at each said tab which is along said second edge, each said row of perforations extending at right angles from said second edge and partially across said foil cover, so as to form foil strips therebetween.

4,363,287

PATTERN PRINTING CEMENTERS

Malcolm M. Ewing, East Rd., Atkinson, N.H. 03811, and Alton R. Copithorne, Weathersfield St., Rowley, Mass. 01969

Filed Apr. 29, 1980, Ser. No. 145,011
Int. Cl.³ B05C 1/02, 13/02
U.S. Cl. 118—50 10 Claims



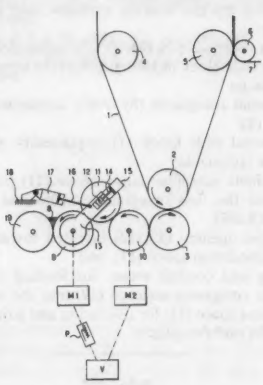
1. Apparatus for imprinting a pattern of cement upon an irregularly shaped workpiece, comprising a base containing a quantity of cement, a work support contoured at least in part to match the contour of the workpiece and providing a target for the placement of the workpiece, an imprinting plate normally submerged in the cement and shaped to apply a pattern of cement only to a pre-determined area of the workpiece when it is raised out of the cement to an imprinting position, a carrier hinged directly upon the base and upon which the work support is mounted for movement between a loading position where the workpiece is adjustably received and an imprinting position in which the work support is in register with the imprinting plate and in which the workpiece on the work support is brought into contact with cement carried by the imprinting plate, means coupling the carrier and the imprinting plate together for causing the imprinting plate to rise above the level of the cement as the work support pivotally approaches the imprinting position and to be submerged as the work support is returned to its loading position, and vacuum means for retaining the workpiece on the work support.

4,363,288

DEVICE FOR APPLYING A COATING LAYER TO A STRIP OF CONTINUOUSLY MOVING MATERIAL

Jacques P. Fara, Le Vesinet, France, assignor to D.C.M., Rueil Malmaison, France

Filed Mar. 26, 1981, Ser. No. 247,937
Claims priority, application France, Apr. 16, 1980, 80 08553
Int. Cl.³ B05C 1/00; B41F 1/46, 31/00
U.S. Cl. 118—210 6 Claims



1. A device for continuously applying a coating layer on a strip of material travelling between two rotary cylinders bearing one against the other and having a rotational speed equal to the travelling speed of the strip, one of said rotary cylinders being an applicator cylinder applying the coating layer to the strip, comprising:

a reserve containing a coating product,

a take-up roller controlled in rotation for continuously taking from the reserve a specific amount of product,

means for transferring the product taken by the take-up roller to said applicator cylinder, the transfer means including a second roller (10) situated between and extending parallel to the take-up roller (9) and the applicator cylinder (3) and bearing only against the applicator cylinder, and a third roller (11) bearing against the take-up roller and the second roller,

first means for rotating the take-up roller at a constant preadjusted speed of rotation, and

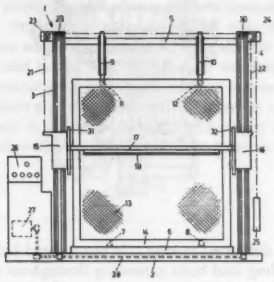
second means for rotating the second roller (10) in the same direction as the take-up roller, at a speed equal to the travelling speed of the strip (1), the third roller (11) being loosely mounted.

4,363,289

PRINTING SCREEN COATING METHOD AND APPARATUS

Rudolf Gasser, Schlieren, Switzerland, assignor to Firma Ernst Harlacher, Urdorf, Switzerland

Filed Sep. 29, 1980, Ser. No. 191,773
Claims priority, application Switzerland, Oct. 2, 1979, 8879/79
Int. Cl.³ B05C 3/02
U.S. Cl. 118—696 6 Claims



1. Apparatus for coating both sides of a vertically disposed flat printing screen with liquid material, comprising

means for holding said screen in a vertical plane,

two horizontally disposed squeegees, both including container means to contain said liquid material,

drive means for causing said squeegees to move vertically along opposite sides of said screen and to apply said liquid material from each container means to opposite surfaces of said screen, and

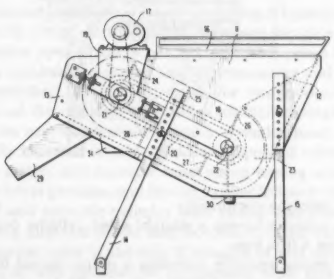
control means for controlling said drive means.

4,363,290

METHOD AND APPARATUS FOR AUTOMATED IMMERSION TREATMENT OF FISH

Lee R. Kunz, Golden, and Guy L. Tebbit, Lakewood, both of Colo., assignors to Wildlife Vaccines, Inc., Wheat Ridge, Colo.

Filed Jun. 26, 1981, Ser. No. 277,534
Int. Cl.³ A01K 63/00
U.S. Cl. 119—3 13 Claims



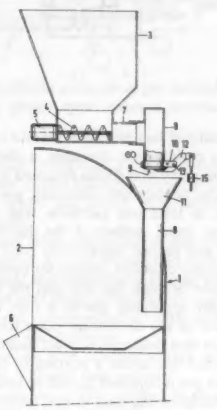
11. A method for treating fish to prevent or treat various diseases of fish comprising placing fish on a moving conveyor belt which automatically conveys the fish down into a reservoir of liquid containing a health and/or welfare enhancing agent for the fish, immersing the fish for a sufficient period of time and then conveys the fish up out of the reservoir at a predetermined time and thereupon permitting the treating liquid to drain from the fish and thereafter returning fish to their environment.

4,363,291

AUTOMATIC CATTLE FEEDING DEVICE

Jan H. Harmsen, Hengelo, Netherlands, assignor to Brinkmann & Niemeyer N.V., Zutphen, Netherlands

Filed Nov. 18, 1980, Ser. No. 208,080
Claims priority, application Netherlands, Nov. 19, 1979, 7908442
Int. Cl.³ A01K 5/02
U.S. Cl. 119—51 R 3 Claims



1. In animal feeding apparatus including

a supply container for holding food,

a dosing device disposed below said supply container and in communication therewith, and

a housing located below said dosing device, said dosing device being operable to remove food from said container and deliver same to a dosing device outlet communicating with said housing, said housing having an opening threrein through which an animal can insert its head to obtain access to food delivered to the housing, the improvement comprising

an interrupted tube assembly having an upper tube part connected communicatively to said dosing device outlet and receiving food therein when said device operates, and a lower tube part spaced below said upper tube part and communicating with said housing,

a tumbler flap mounted for pivoting movement adjacent the bottom of said upper tube part and connected wih a counterweight normally pivoting said tumbler flap in a first direction to a position thereof where it closingly engages the bottom of said upper tube part and retains thereon food delivered to said upper tube part, presence of a predetermined quantity of food on said tumbler flap overcoming the effect of said counterweight and causing said tumbler flap to pivot in a second opposite direction to a second position remote from said upper tube part bottom and thereby drop the food therefrom into said lower tube part, and

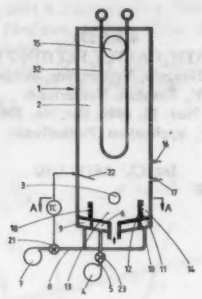
a switch operable upon movement of said tumbler flap from its closure position to second position to stop operation of said dosing device.

4,363,292

FLUIDIZED BED REACTOR

Folke Engström, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Oct. 27, 1980, Ser. No. 200,766
Int. Cl.³ F22B 1/02
U.S. Cl. 122—4 D 5 Claims



1. A fast fluidized bed multifuel reactor comprising: a housing forming a combustion chamber, a distributor plate provided with a plurality of orifices disposed in the bottom part of said housing for introducing fluidizing gas into said combustion chamber, at least one partition wall which is disposed adjacent to the upper surface of the distributor plate, which defines a first and second fluidization zone in the bottom part of said combustion chamber, means for operating only the first fluidization zone or both the first and the second fluidization zone, means for supplying gas to a first wind box disposed under a portion of the distributor plate through which gas is supplied to said first fluidization zone, means for supplying gas to a second wind box under a portion of the distributor plate through which gas is supplied to said second fluidization zone, heat transfer surfaces disposed in said second fluidization zone connected to a steam generator system, cooling means within the combustion chamber located above the part of the first fludization which is free of internal obstructions, said cooling means being connected to the same steam generation system, to which said heat transfer surfaces are connected, wherein said second fluidization at least partially encloses said first fluidization zone forming an inner fluidization zone.

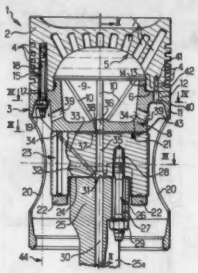
4,363,293

PISTON FOR A RECIPROCATING PISTON MACHINE, PARTICULARLY AN INTERNAL COMBUSTION ENGINE

Bernard Munoz, Puiseux, and Eric Tavenne, Paris, both of France, assignors to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

Filed Apr. 15, 1981, Ser. No. 254,381
Claims priority, application France, May 30, 1980, 80 12148
Int. Cl.³ F01D 3/10
U.S. Cl. 123—41.38 10 Claims

1. A piston for a reciprocating piston machine, said piston being swivelled by means of a piston pin to an associated connecting rod small end and including a piston head and a piston skirt assembled together by stud bolts, the piston head comprising on its end surface adjacent to the piston skirt a central hollow forming a portion of a cooling chamber, the other portion of said chamber being formed by a central hollow provided in the adjacent end surface of the central portion of the piston skirt, said chamber comprising part of a cooling and lubricating system wherein said central portion of the piston skirt is constituted by a substantially cylindrical hollowed central boss provided with radial ribs to better distribute the force transmitted by the piston head, the connection of said central boss to the peripheral cylindrical surface of said piston skirt is by means of a peripheral annular crown with a flat upper surface perpendicular to the axis of the piston and delimited inwardly by a shoulder which is centered in the piston head hollow, the upper surface of said crown constituting the joint surface between the piston skirt and the piston head, and upon which bears the peripheral annular flat surface of the



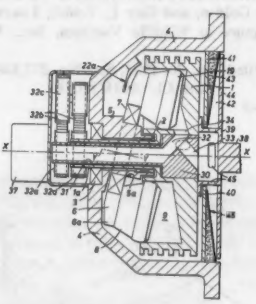
piston head delimited around said piston head hollow, each of said assembling stud bolts extending throughout an associated orifice machined in the annular crown of said central boss of the piston skirt and engaged into a tapped blind orifice machined in the piston head, said assembling stud bolts being accessible directly from the outside through the piston skirt and in the axial direction of said stud bolts.

4,363,294

PISTON AND CYLINDER MACHINES

Russell J. Searle, 1, Thames Corner, Thames Street, Sunbury-on-Thames, Middlesex, England

Filed May 22, 1979, Ser. No. 41,902
Claims priority, application United Kingdom, May 25, 1978, 22849/78; Dec. 14, 1978, 48553/78
Int. Cl.³ F02B 57/00, 75/26
U.S. Cl. 123—43 A 6 Claims



1. A machine comprising:

(a) a cylinder having a straight sided cylinder bore spaced from a first axis;

(b) a piston assembly including a piston shaped to define a peripheral recess having a floor with two opposite flat portions, said piston being disposed within said cylinder bore to form a chamber therein, said piston assembly further including a connecting member connected to said piston and restraining means for resisting any tendency for the piston to move in relation to said cylinder about said first axis;

(c) an inclined member mounted such that relative rotation between said inclined member and said cylinder occurs

about said first axis, said inclined member being inclined to said first axis along a second axis, said connecting member being coupled to said inclined member such that said relative rotation of said cylinder and said inclined member is accompanied by reciprocation of said piston within said cylinder;

(d) valve means for fluid moving through said machine in the use thereof;

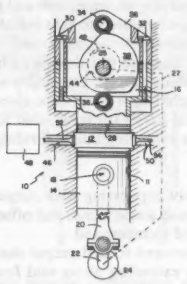
said piston assembly also including a piston ring disposed around said piston, said piston ring being moveable as a whole laterally with respect to said piston, and said restraining means comprising a ring-shaped member having two flat internal surface portions which match said two opposite flat portions of said floor of said recess, said ring-shaped member being engaged in said recess in such a way that lateral movement of said piston ring relative to said piston is restricted to a to-and-fro direction which is radial, or which has a major component which is radial, with respect to said second access.

4,363,295

MOVABLE HEAD ENGINE

Ernest B. Brandly, 900 S. A St., Suite 314, Richmond, Ind. 47374

Filed Sep. 10, 1980, Ser. No. 185,742
Int. Cl.³ F02B *25/10*
U.S. Cl. 123—51 AA **5 Claims**



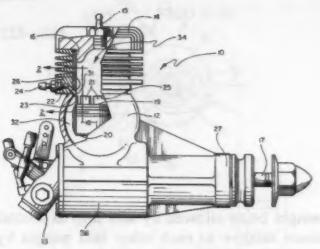
1. An internal combustion engine including a cylinder having means for the intake of fuel and air, means for the exhaust of combustion by-products, a reciprocable drive piston in said cylinder, a crankshaft, a connecting rod connecting said piston to said crankshaft, a camshaft, means for synchronizing the movement of the camshaft with the crankshaft, a single cam provided on said camshaft, a movable cylinder head piston reciprocally mounted in said cylinder in opposed relation to said drive piston, said movable head piston having separable upper and lower portions, and having a roller follower on each portion of said movable cylinder head piston, said roller followers being disposed within said movable cylinder head piston on opposite sides of the axis of rotation of said camshaft, movement of said camshaft in engagement with said roller followers causing reciprocating movement of said movable cylinder head piston wherein said movable cylinder head piston is projected toward said drive piston during at least and substantially for 45° of camshaft rotation, is held at a point of maximum projection during at most and substantially for 135° of camshaft rotation, is retracted during at least and substantially for 45° of camshaft rotation, and is held at a point of maximum retraction during at most and substantially for 135° of camshaft rotation.

4,363,296

COMBUSTION CHAMBER PRESSURE TAP

James P. Nightingale, 218 Via El Centro, Oceanside, Calif. 92054

Filed Sep. 15, 1980, Ser. No. 187,443
Int. Cl.³ F04B *35/02*
U.S. Cl. 123—59 BM **2 Claims**



1. An apparatus to obtain a source of gas under high pressure from an operating, piston type internal combustion engine comprising:

an engine block,

at least one cylinder containing a piston connected to said engine block, said piston having a crown at a first end and a skirt portion below said crown terminating at a second end of said piston,

at least one cylinder head connected to said cylinder,

a combustion chamber formed within said cylinder between said cylinder head and said crown of said piston,

at least one exhaust port being downwardly spaced from said cylinder head and communicating with said combustion chamber through said cylinder,

at least one fuel intake port communicating with said combustion chamber through said cylinder,

at least one pressure tap orifice formed in said at least one cylinder communicating with said combustion chamber positioned immediately above said exhaust port between said cylinder head and said exhaust port, said pressure tap orifice being exposed to said high exhaust gas pressure when said crown of said piston moves past said orifice when said piston is substantially at the end of its power stroke, said high pressure gas being directed to pressure accumulation means just prior to expelling said high pressure exhaust gases through said at least one exhaust port.

4,363,297

IGNITION TIMING CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Hiroyasu Naito, Sayama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 5,331, Jan. 22, 1979, abandoned. This application Aug. 14, 1980, Ser. No. 178,084
Claims priority, application Japan, Feb. 3, 1978, 53-12517
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—146.5 A **3 Claims**

1. In an internal combustion engine, an ignition timing control device comprising in combination

a stationary pulse generator,

a rotary member,

a drive means coupled with said rotary member for rotation in timed relation with the engine crankshaft,

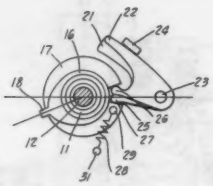
a timing control element pivotally mounted coaxially on said rotary member, said stationary pulse generator being proximal to said timing control element,

a first pivot pin fixed to said rotary member and aligned parallel to the axis of said rotary member,

a plurality of eccentric weights pivotally and eccentrically mounted to said first pivot pin, each of said eccentric weights having a finger projecting to said timing control

element for coupling therewith to pivot said element relative to said rotary member with pivotal movement of each said eccentric weight, said eccentric weights being of different effective weight one from another,

a stop fixed to said rotary member and positioned to interfere with the pivotal movement of said eccentric weights, each



said weight being allowed by said stop to pivotally move a distance relative to each other said weight by inverse relation to its effective weight, and

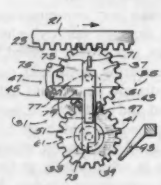
spring means acting between said rotary member and said timing control element to resist pivotal movement of said timing control element resulting from movement of said eccentric weights.

4,363,298

LAWN MOWER BRAKE AND STARTER

John B. Kuhn, Beaver Dam, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 18, 1980, Ser. No. 217,586
Int. Cl.[3] F02N 5/02
U.S. Cl. 123—179 S 16 Claims



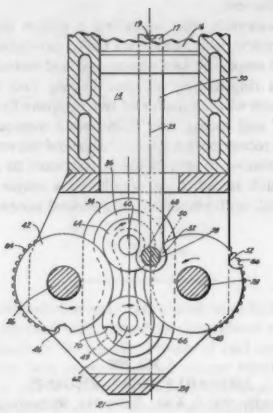
1. A lawn mower including an engine having a first rotatable member, an energy storage and delivery mechanism connected to said engine and comprising energy storage means, an assembly including rotatably mounted second and third members in direct driving engagement with each other and with one of said members of said assembly being connected to said energy storage means, said assembly being displaceable between a stop position wherein one of said second and third members is in direct driving engagement with said first member so as, in response to rotation of said first member, to rotate said second and third members in the direction which is effective to store energy in said storage means and a start position wherein the other of said second and third members in in direct driving engagement with said first member so as, in response to delivery of energy to said assembly from said storage means, to rotate said first member in the engine operating direction, releasable means movable selectively between positions engaged with and disengaged from said energy storage and delivery mechanism for permitting delivery of energy to said storage means and preventing delivery of energy from said storage means when in the engaged position and for permitting delivery of energy from said storage means when in disengaged position, and means for selectively displacing said releasable means from said engaged position in response to movement of said assembly to said start position and to said engaged position in response to assembly movement from said start position.

4,363,299

CRANKLESS INTERNAL COMBUSTION ENGINE

Robert D. Bristol, P.O. Box 337, Beulah, Mich. 49617

Filed Jun. 9, 1980, Ser. No. 157,870
Int. Cl.[3] F02B 75/32
U.S. Cl. 123—197 AB 13 Claims



1. A mechanism for converting linear reciprocating motion of a member to rotary output movement, said mechanism comprising:

an elongated rod having an upper end and a lower end, said upper end being connected to said member;

guide means operatively connected to said rod lower end for guiding and moving said rod along a path having first and second, horizontally spaced, essentially vertical runs, said guide means including a fixed cam member defining an elongated, closed loop cam track, said lower end of said rod having a pin extending into and riding along said cam track;

an output shaft;

means for rotatably supporting said output shaft adjacent said first run of said guide means and offset from a vertical centerline of said member; and

an output means secured to said output shaft and having an outer periphery extending along said first run for operatively connecting said output shaft to said elongated rod lower end so that torque is transmitted to said output shaft as said rod moves along said first essentially vertical run as said member reciprocates.

5. An internal combustion engine of the type including a cylinder, a piston reciprocal within the cylinder, an elongated rod having an upper end connected to the piston and a lower end, and driven means operatively connected to the lower end of the rod for converting reciprocating movement of the piston and rod to rotary output movement, said driven means comprising:

guide means operatively connected to the lower end of the rod for guiding and moving the lower end of said rod along a predetermined, generally vertical, closed loop path having first and second, horizontally spaced, essentially vertical runs, said guide means including a fixed cam member fixed with respect to said cylinder and which defines an elongated, closed loop cam track, said rod lower end having a pin extending into and riding along said cam track so that said lower end moves along said cam track;

an output shaft;

means for rotatably mounting said output shaft adjacent said first run of guide means and offset from a vertical centerline of said cylinder and said piston;

a generally circular driven member on said output shaft, said

driven member having an outer periphery extending along said first run of said guide means; and

drive means engaging said driven member for rotating said driven member as said rod lower end moves from a first position to a second position along said cam track during a power stroke of said engine so that torque is transmitted to said output shaft as said rod moves along said first essentially vertical run as said piston reciprocates.

4,363,300

FOUR-CYCLE INTERNAL COMBUSTION ENGINE AND ASSOCIATED METHODS OF FUEL COMBUSTION

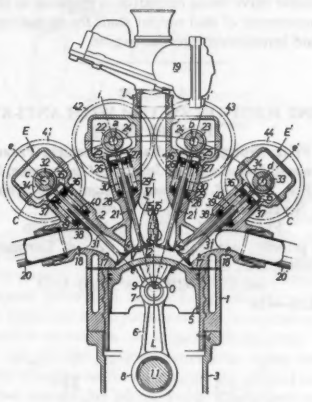
Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,821

Claims priority, application Japan, Sep. 10, 1979, 54-115842

Int. Cl.³ F02F 3/28; F02B 15/00

U.S. Cl. 123—315 25 Claims



1. A four-cycle internal combustion engine comprising a cylinder block having a cylinder bore therein, a piston slidably fitted in said bore, a cylinder head on said block, said cylinder head being provided with a combustion chamber merging with said cylinder bore, said piston, cylinder bore and combustion chamber having a transverse cross-section of non-circular shape with a major longitudinal axis and a minor transverse axis, vertical planes passing through said longitudinal and transverse axes intersecting along a central axis passing through the center of the cylinder bore and combustion chamber, said combustion chamber having a central region and an outer region, inlet means for introducing fuel mixture into said central region of the combustion chamber on opposite sides of said vertical plane passing through said longitudinal axis and discharge means for discharging exhaust gases at said outer region of said combustion chamber on opposite sides of said vertical plane passing through said longitudinal axis, said inlet means being arranged around said central axis at a distance therefrom which is less than the distance of said discharge means from said central axis, said inlet means comprising a pair of inlet valves on opposite sides of said vertical plane passing through said transverse axis, said discharge means comprising a pair of exhaust valves on opposite sides of said vertical plane passing through said transverse axis in said outer region outside said inlet valves.

4,363,301

BRAKING DEVICE FOR A FOUR-CYCLE ENGINE OF A VEHICLE

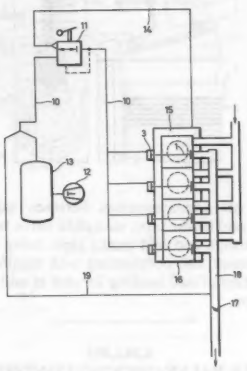
Hugo Stock, and Paul Tholen, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,326

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005456

Int. Cl.³ F02D 9/06

U.S. Cl. 123—321 8 Claims



1. A braking device for a four-cycle engine of a vehicle, particularly for an internal combustion Diesel engine, having a motor brake adjustment member, and respective exhaust valves for the cylinders of said engine, said exhaust valves having valve shafts, said braking device comprising:

pressure cylinders respectively associated with said exhaust valves;

an exhaust conduit connected to said exhaust valves and provided with a shutoff element which is connected to said motor brake adjustment member;

a pressure conduit connected to said pressure cylinders and provided with a control element which is likewise connected to said motor brake adjustment member, said connection of said pressure cylinders with said pressure conduit occurring after said control element; and

compensating pistons respectively connected to said valve shafts and associated with said pressure cylinders, said pistons being subjected to pressure in said pressure cylinders for closing said exhaust valves thereby preventing uncontrolled lifting thereof, said motor brake adjustment member having a first adjustment range for actuating said shutoff element, and a second adjustment range for actuating said control element.

4,363,302

FEED CONTROL BY MEANS OF A FLAT SLIDE VALVE

Franz Pischinger, Aachen, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,821

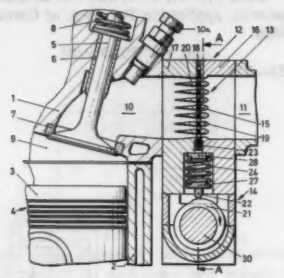
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929195

Int. Cl.³ F02B 3/00

U.S. Cl. 123—337 18 Claims

1. A device utilized with a fuel source and a combustion-air source for feed control of valve-controlled internal combustion engines having at least one cylinder and cylinder head arrangement, each of which has a combustion chamber and a housing attached to said cylinder head and provided with an intake passage and an intake pipe for providing communication between said fuel source and combustion-air source and said

combustion chamber, each of said cylinder/cylinder head arrangements also being provided with an intake valve for shutting off communication between said combustion chamber and said intake passage, said device comprising a further shut-off element, in the form of a manifold slotted flat slide valve,



for shutting off communication between said combustion chamber and said intake pipe, said slide valve being located in said intake passage and said intake pipe, being movable in an oscillating manner, and cooperating with manifold slot-shaped ports in a portion of said housing located in said intake passage and intake pipe.

4,363,303

THROTTLE VALVE OPENING CONTROL DEVICE

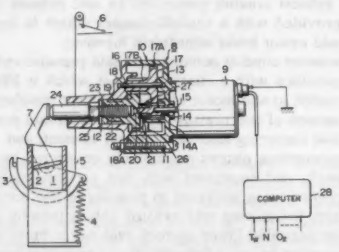
Teruo Takayama, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 294,056

Claims priority, application Japan, Sep. 3, 1980, 55-121084; Sep. 10, 1980, 55-124602

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **8 Claims**



1. A device for controlling an opening degree of a throttle valve of an internal combustion engine, comprising:

a computer for generating electric signals in response to operating parameters of the engine;

an electric rotary machine driven in response to the electric signals from said computer;

an initial stage speed reducing gear rotated around its rotational axis by said electric rotary machine and having first gear teeth arranged circumferentially of said initial stage speed reducing gear;

an intermediate speed reducing gear having a rotational axis thereof offset from the rotational axis of said initial stage speed reducing gear, said intermediate speed reducing gear having arranged circumferentially thereof second gear teeth in mesh with said first gear teeth of said initial stage speed reducing gear, said intermediate speed reducing gear further having arranged circumferentially thereof third gear teeth;

a final stage speed reducing gear having a rotational axis thereof in coaxial relation to the rotational axis of said initial stage speed reducing gear, said final stage speed reducing gear having arranged circumferentially thereof fourth gear teeth in mesh with said third gear teeth of said intermediate speed reducing gear;

a shaft extending in coaxial relation to the rotational axes of said initial and final stage speed reducing gears, said shaft having one end thereof secured to an end surface of one of said initial and final stage speed reducing gears, and a bearing section formed in an end surface of the other speed reducing gear opposite to the end surface of said one speed reducing gear for rotatably supporting the other end of said shaft;

a threaded portion formed in an end of said the other speed reducing gear opposite to the end surface thereof having formed therein said bearing section and extending in concentric relation to the rotational axis of said the other speed reducing gear;

an output shaft having thereon a threaded portion threadedly engageable with said threaded portion in said the other speed reducing gear for converting the rotational movement of said the other speed reducing gear to the reciprocal movement of said output shaft;

a case attached in unitary relation to said electric rotary machine for surrounding at least said initial, intermediate and final stage speed reducing gears; and

said throttle valve being operative in response to the reciprocal movement of said output shaft for adjusting flow rate of fluid introduced into the engine.

4,363,304

ENGINE IGNITION SYSTEM WITH ANTI-KNOCK TIMING SHIFT

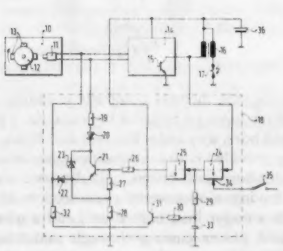
Adolf R. Fritz, Stuttgart; Michael Gottschick, Freudental; Alfred Krappel, Ismaning, and Johannes Guggenmos, Dirlewang, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,826

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020868; Dec. 6, 1980, 3046100

Int. Cl.³ F02P *5/04*; F02B *5/02*

U.S. Cl. 123—418 **16 Claims**



1. An ignition system for an internal combustion engine having an inductive ignition timing wave generator (**10**) arranged to control an electronic switch (**15**) in the primary current circuit of an ignition coil (**16**) and provided with circuit means for ignition timing shift by loading of the output of said wave generator, said system also comprising the improvement which consists in that:

first timing means (**24, 50, 51**) are provided for deriving from the current wave in said primary circuit a signal delayed by a first timing period (t1) with respect to a periodic reference point of said current wave, and

second timing means (**25, 50, 51**) are provided for supplying a time period signal (t2) beginning with the occurrence of said delayed signal and applying said time period signal to said timing shift circuit (**19, 20, 21**) for loading down said wave generator output, during and only during, any part

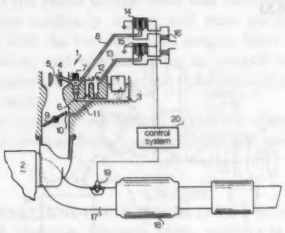
of a half wave of a predetermined polarity of said output coincident with said time period signal.

4,363,305

CONTROL SYSTEM

Masaaki Ohgami, Musashino, and Hitoshi Suzuki, Chofu, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,387
Claims priority, application Japan, Aug. 2, 1979, 54-98854
Int. Cl.[3] F02B 3/08, 32/00
U.S. Cl. 123—440 5 Claims



1. In an air-fuel ratio control system for an internal combustion engine having an intake passage, an exhaust passage, air-fuel mixture supply means, and electromagnetic means for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the system comprising

dither signal generating means for producing a periodical dither signal having a pattern which comprises a plurality of positive excursions and negative excursions,

at least one of said positive excursions being lower than another of said positive excursions and at least one of said negative excursions being lower than another of said negative excursions,

a shift control circuit means for shifting the level of a center line of said dither signal,

driving circuit means for producing a driving output according to said dither signal for driving said electromagnetic means,

detecting means for sensing the concentration of a constituent of the exhaust gases passing through said exhaust passage,

said detecting means including means for distinguishing a higher value than a reference value corresponding to the stoichiometric air-fuel ratio from a lower value with a steep change,

comparing circuit means for comparing the shape of waveform of the output signal of said detecting means with said pattern of said dither signal for detecting a portion removed from the dither signal for producing a first signal corresponding to the detected portion,

reference period generating circuit means having a reference period and for controlling the period of said dither signal and the operation of said comparing circuit means,

an engine speed sensor for reducing said reference period as the engine speed increases, and

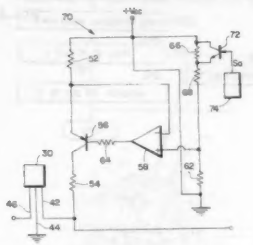
shift signal generating circuit means operative for producing a shift signal dependent on said first signal for adjusting said shift control circuit means.

4,363,306

SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE HAVING MEANS FOR SUPPLYING CONTROLLED CURRENT TO OXYGEN SENSOR

Kohki Sone, Tokyo; Kenji Okamura, Zushi, and Toyoaki Nakagawa, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 26, 1980, Ser. No. 190,980
Claims priority, application Japan, Sep. 28, 1979, 54-134084[U]
Int. Cl.[3] F02M 7/00
U.S. Cl. 123—440 6 Claims



1. A system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the control system comprising:

an electrically controllable fuel supply means provided in the intake system of the engine;

an air/fuel ratio detector disposed in an exhaust passage for the engine and having an oxygen-sensitive element of a concentration cell type comprising a substrate, a microscopically porous reference electrode layer formed on the substrate, a microscopically porous layer of an oxygen ion conductive solid electrolyte formed on the substrate so as to cover the reference electrode layer substantially entirely and a microscopically porous measurement electrode layer formed on the solid electrolyte layer;

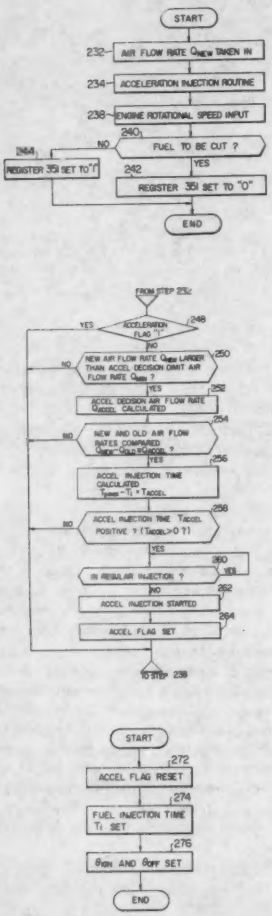
operating condition detecting means for detecting at least one of (i) an exceedingly high air/fuel ratio condition where the air/fuel ratio is above an upper boundary of an expected range of fluctuations of air/fuel ratio under feedback control and (ii) an exceedingly low exhaust temperature condition where the temperature of the exhaust gas in the exhaust passage is below a lower boundary of a temperature range for effective function of the oxygen-sensitive element, and for generating a command signal indicative of the existence of the detected condition; and

control means for providing a control signal to the fuel supplying means to control the rate of fuel feed to the engine so as to maintain a predetermined air/fuel ratio by utilizing the output of the air/fuel ratio detector as a feedback signal, the control means including a circuit for providing a DC current of a predetermined intensity to flow through the solid electrolyte layer of the oxygen-sensitive element to thereby establish a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer, the control means further comprising a current-intensity altering means for decreasing the intensity of said DC current from said predetermined intensity while the operating condition detecting means continues to generate said command signal whereby an undesirable rise of said reference oxygen partial pressure is precluded.

4,363,307
METHOD FOR ADJUSTING THE SUPPLY OF FUEL TO AN INTERNAL COMBUSTION ENGINE FOR AN ACCELERATION CONDITION

Matsuo Amano, Hitachi; Yasunori Mouri; Osamu Abe, both of Katsuta; Seiji Suda, Mito, and Takao Sasayama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,857
Claims priority, application Japan, Mar. 7, 1980, 55-27936
Int. Cl.³ F02D 5/00; F02B 3/00; G05B 15/02
U.S. Cl. 123—492 5 Claims

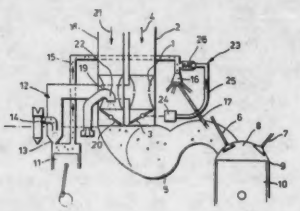

START
AIR FLOW RATE Q_AIR IN TAKEN IN
ACCELERATION INJECTION ROUTINE
ENGINE ROTATIONAL SPEED INPUT
FUEL TO BE CUT ?
NO
YES
REGISTER 351 SET TO "1"
REGISTER 351 SET TO "0"
END
FROM STEP 232
ACCELERATION FLAG "1" ?
NEW AIR FLOW RATE Q_AIR LARGER THAN ACCEL DECISION OMIT AIR FLOW RATE Q_ADEC ?
ACCEL DECISION AIR FLOW RATE Q_ACCEL CALCULATED
NEW AND OLD AIR FLOW RATES COMPARED
ACCEL INJECTION TIME CALCULATED
ACCEL INJECTION TIME T_ACCEL POSITIVE ? (T_ACCEL>0 T)
IN REGULAR INJECTION ?
ACCEL INJECTION STARTED
ACCEL FLAG SET
TO STEP 238
START
ACCEL FLAG RESET
FUEL INJECTION TIME T_i SET
θ_IGN AND θ_OFF SET
END

1. In an engine control system with a processor comprising a plurality of sensors each indicating a parameter including at least load information of an engine, said each sensor generating a signal to be applied to said processor, actuator means for controlling the amount of the fuel injected to said engine according to the data calculated by said processor, and an input-output device for connecting said sensors, said actuator means and said processor; an engine operation control method comprising a first step of activating said actuator means in accordance with the regular fuel injection time calculated on the basis of a parameter representing said load information of the engine in cycles corresponding to the intake process of the engine cylinder, a second step of deciding in predetermined cycles whether the engine is in an accelerated condition, and a third step of injecting the fuel by activating said actuator means for a length of time equal to a predetermined reference maximum fuel injection time less said regular fuel injection time, said fuel injection being effected only once in each interval of the operation of said first step, in the case where it is decided at said second step that the engine is in an accelerated condition.

4,363,308
FUEL INJECTION APPARATUS

Klaus-Dieter Emmenthal; Otto Schäfer, both of Wolfsburg, and Rudolf-Helmut Strozyk, Helmstedt, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Division of Ser. No. 942,416, Sep. 14, 1978, Pat. No. 4,224,915.
This application May 5, 1980, Ser. No. 146,201
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817049
Int. Cl.³ F02M 39/00
U.S. Cl. 123—533 9 Claims



1. Apparatus for injecting fuel into the intake pipes of an internal combustion engine, said engine having an intake line for conducting air to said intake pipes with an arbitrarily adjustable throttle flap arranged therein, said fuel injection apparatus comprising, in combination:

(a) an air channel branching off from said intake line at a point ahead of said throttle flap, as viewed in the direction of air flow through said intake line, and having at its opposite end a narrowed cross section;

(b) fuel metering means for supplying fuel to said air channel in dependence upon engine load;

(c) a fuel distributor and means, connected to said distributor, for supplying a fuel-air mixture to the individual intake pipes of the engine;

(d) a fuel delivery pump connected between said narrowed cross section of said air channel and said distributor for supplying fuel and air to said distributor;

(e) auxiliary fuel supply means for supplying additional fuel to said engine for idling and/or cold starting operation; and

(f) a fuel float chamber connected to supply fuel both to said fuel metering means and to said auxiliary fuel supply means, the fuel level in said floatchamber being arrested at a height with respect to said auxiliary fuel supply means that the fuel pressure head is sufficient to ensure a proper fuel supply thereto.

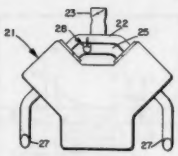
4,363,309
VALVE, PARTICULARLY CROSSOVER PASSAGE VALVE

George C. Ludwig, Florence, S.C., assignor to AVM Corporation, Jamestown, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,758
Int. Cl.³ F16K 1/22
U.S. Cl. 123—552 11 Claims

1. In a metal engine manifold unit having an exhaust gas

passage, the provision of a butterfly-type valve having a stem rotatably mounted in the unit and carrying a gas flow modifying valve element disposed in said passage, and means for sealing against escape of exhaust gases along said stem comprising: means including a stem boss mounting said valve element on said unit; an annulus of a combined sealing and bearing material with a cylindrical hole and a flat radial annular face mounted on the end of said boss in surrounding radial bearing



relationship to said stem; said stem including a portion with an enlarged flat radial annular face; said mounting means including means resiliently urging said stem portion against said annulus with the two flat radial annular faces in axial bearing engagement; said annulus being an integral annulus of compressed graphite providing heat resistant sealing at said bearing engagements.

4. The manifold unit defined in claim 1, wherein said passage is an exhaust gas crossover passage in said unit.

4,363,310

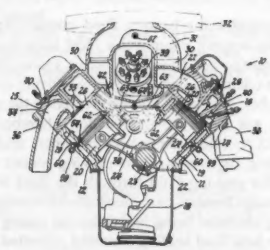
DIESEL ENGINE WITH BLOWBY SCAVENGING

Kelly W. Thurston, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 165,712, Jul. 3, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 234,637

Int. Cl.³ F02B *33/00*

U.S. Cl. 123—572 **5 Claims**



1. In a diesel engine of the type having a cylinder with closed and open ends, a piston reciprocable in the cylinder and defining therewith a variable volume combustion chamber at the cylinder closed end, means at the cylinder closed end for admitting charging fluids to and exhausting residual products from the combustion chamber, a lubricant chamber at the open end of the cylinder, the piston having a skirt bearing on the cylinder under side thrust loading, and at least two spaced sealing rings on the piston and engaging the cylinder to limit the passage of combustion blowby products and lubricant from their respective chambers to the other, at least the top one of said sealing rings being located between the skirt and the combustion chamber end of the piston, and the improvement comprising

an annular recess around the piston between the skirt and said top sealing ring, said recess comprising a blowby storage space of volume sufficient to collect a substantial amount of the blowby gases which escape from the combustion chamber past the top one of said sealing rings during each cycle of piston reciprocating motion, and

blowby scavening means intermittently communicating with said recess to carry away blowby gases collected therein and thereby reduce contamination of the lubricant with particulates from the combustion products, said blowby scavenging means including an air supply passage in the cylinder and positined to communicate with the piston recess near the bottom position of piston motion and to be closed by the pistion skirt during other portions of the piston motion.

4,363,311

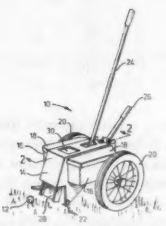
GOLF BALL DRIVING DEVICE

Peter W. Rodney, 66 Elmcrest Rd., Etobicoke, Ontario, Canada (M9C 3R9)

Filed Aug. 28, 1981, Ser. No. 297,153

Int. Cl.³ F41B *7/00*; **A63B** *53/00*

U.S. Cl. 124—16 **14 Claims**



1. A golf ball driving device having a frame, wheels secured to said frame for mobility of said device, and at least one support means for said frame when said device is at rest; and having:

compression means for storing compressed energy;

means for compressing said compression means;

means for releasing the compression of said compression means;

striker plate means associated with said compression means and adapted for forward motion in such a manner that the path of said striker plate generally describes a downwardly and forwardly directed arc, the lowest point of the arcuate movement of said striker plate so defined being at a position when said compression means has its least compression;

said means for compressing said compression means being a driving ratchet on a cam associated with a moveable and drivable ratchet bar; said driving ratchet and cam being moveable to a position where said driving ratchet is out of engagement with said ratchet bar;

said means for releasing the compression of said compression means being a follower arm in contact with said ratchet bar; said followr arm being disengageable from said ratchet bar; and,

first handle means for driving said cam and ratchet means so as to compress said compressor means; and second handle means for moving said follower arm out of contact with said ratchet bar.

4,363,312

BOW MOUNTED QUIVER

Arthur Spitzke, Troy, Mich., assignor to Schmelzer Corporation, Flint, Mich.

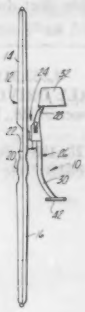
Filed Dec. 26, 1978, Ser. No. 973,229

Int. Cl.³ F41B *5/06*

U.S. Cl. 124—45 **5 Claims**

1. An archery quiver for attachment and detachment to an archery bow in which the quiver can hold a plurality of arrows having heads and shafts, said quiver comprising; spaced apart

housing and rack members, said housing having a portion for arrow heads and said rack member being adapted to engage and grip arrow shafts, a first mounting member formed integrally with said quiver at a point intermediate said housing and rack members, a second mounting member being adapted to be mounted on the handle of said bow, one of said mounting members including a socket and the other of said mounting members including a complementary prong to be detachably



received in said socket, a latch element formed as a unit with said prong and being deflectable relative to said prong and into engagement with a latch receiving portion associated with said socket to prevent removal of said prong from said socket, and deflectable means associated with a wall of said socket for manual movement into engagement with said latch element to deflect said latch element out of engagement with said latch receiving portion to permit removal of said prong from said socket during detachment of said quiver from the bow.

4,363,313

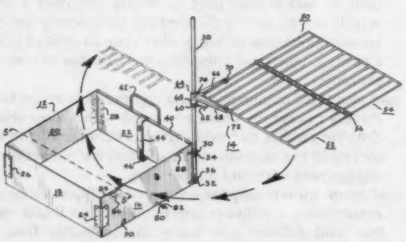
PORTABLE CAMPFIRE FIREPLACE

Robert J. Smith, 58444 S.R. 15, Goshen, Ind. 46526

Filed Nov. 24, 1980, Ser. No. 209,522

Int. Cl.³ F24C *15/00*; A47J *37/00*

U.S. Cl. 126—9 R **8 Claims**



1. A portable campfire fireplace comprising a firebox including four walls, hinge means for interconnecting said walls at three corners to permit said walls to be moved between an open position in which the walls are disposed adjacent each other at their end edges to define a substantially enclosed inner area in which the fire may be built and a closed position in which said walls are compactly arranged for storage, releasable fastening means connecting the walls at the fourth corner including eyes disposed on each of said adjacent end edges of said walls at said fourth corner and overlapping each other when said firebox is in the open position, an elongated post removably inserted into said overlapping eyes to lock said eyes together and to hold said post in a vertical position on the firebox, a cooking unit mounted on said post and including a cooking surface on which meals can be prepared, and means for adjusting the position of said cooking surface vertically and horizontally with respect to said firebox.

4,363,314

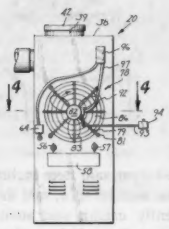
HEATING APPARATUS

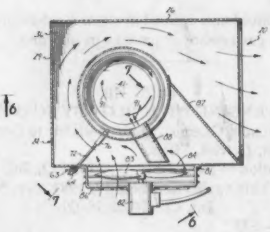
Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391

Filed Dec. 15, 1980, Ser. No. 216,658

Int. Cl.³ F24H *3/02*

U.S. Cl. 126—110 B **41 Claims**





22. An apparatus for heating fluid comprising: a housing having a fluid heating chamber, a fluid inlet opening, and a fluid exit opening open to said chamber, casing means having a combustion chamber, said casing means being located in said heating chamber, exhaust means connected to the casing means for carrying gas from the combustion chamber, means for supplying fuel to said combustion chamber, said fuel, when burned, heating the casing, fluid moving means mounted on the housing for moving fluid through the fluid inlet opening, the fluid heating chamber, and the fluid exit opening, said fluid in the heating chamber being heated by the casing means, solid wall means in said fluid heating chamber extended between the case and housing providing a one-way passage for directing fluid around the casing means, and means having a passage for directing fluid from the fluid moving means into the combustion chamber to promote burning of fuel in the combustion chamber.

4,363,315

OVEN WITH VISIBLE DISPLAYS

Georg von Blanquet, Baden-Baden, Fed. Rep. of Germany, assignor to Gaggenau-Werke Haus- und Lufttechnik GmbH, Gaggenau, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,282

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943917

Int. Cl.³ A21B *1/00*

U.S. Cl. 126—273 R **10 Claims**

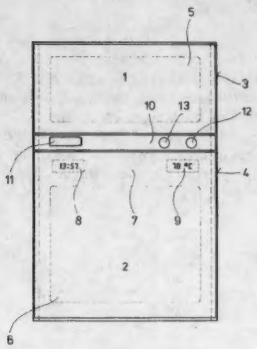
1. In an oven of the type including an oven structure having an oven interior, an oven door for closing said oven interior, and visible adjustment and display elements for setting and

displaying parameters relating to the operation of the oven, the improvements wherein:

said oven structure includes a support;

said adjustment and display elements are visual elements mounted on said support;

said oven door comprises a transparent or translucent front plate for allowing viewing therethrough;



said support and said visual elements are covered by said front plate when said oven door is closed; and

said front plate has light absorbing or reflecting means for imparting to said front plate properties such that only said visual elements and said oven interior when illuminated are visible through said front plate, and such that said visual elements and oven interior when not illuminated are not visible through said front plate.

4,363,316

VESSEL FOR FOOD PREPARATION

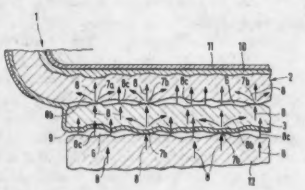
Tiina Aakenus, Vantaa; Pekka Mertanen, and Reijo Peltonen, both of Helsinki, all of Finland, assignors to Oy Wartsila AB, Helsinki, Finland

Continuation of Ser. No. 953,458, Oct. 23, 1978, abandoned. This application Dec. 18, 1980, Ser. No. 217,916

Claims priority, application Finland, Nov. 11, 1977, 773277

Int. Cl.³ A47J *27/00*

U.S. Cl. 126—390 **12 Claims**



1. A vessel for food preparation having a side wall structure and a bottom, said bottom comprising:

two plate members;

a first of said two plate members forming an inner portion integral with said side wall structure and having an outer portion with a uniform surface;

a second of said two plate members which is a separate member and has a surface facing the outer portion ofsaid first plate member and being uniform therewith, said second plate member being rigidly attached to an in contact with the uniform surface of said first plate member;

several spaced-apart small-area attachment points for rigidly attaching said first plate member to said second plate member, said spaced-apart small-area attachment points having therebetween, at least in one direction along the mutual contact surfaces of said two plate members, an area of considerable length being free of attachment points between said two plate members; and

the thickness of said second plate member and the distance between said attachment points being related so as to allow buckling of said second plate member due to thermal expansion thereof, thereby introducing an air gap between said two plate members.

4,363,317

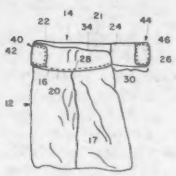
WATERTIGHT CAST COVER

Daniel M. Broucek, 3010 Shaffer Rd., SE., Grand Rapids, Mich. 49508

Filed Apr. 16, 1981, Ser. No. 254,971

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—82 **8 Claims**



1. A watertight cover for protecting a cast, bandage or the like on an individual's limb, said cover comprising:

an elongated, generally tubular waterproof member having an open end, said member dimensioned to receive the limb of the individual; and

adjustable, resilient seal means joined to and extending around the periphery of said open end of said member for sealing the open end of said member to the limb, said seal means being adjustable in circumference to accommodate different size individuals and insure a comfortable seal to the limb, said adjustable seal means being an elongated elastic band having a first lateral edge extending around and joined to substantially the entire periphery of said open end, said band including a fixed end portion which defines an upper lateral edge, a portion of said upper lateral edge being angled toward the periphery of said open end, said band having a free end portion overlapping the fixed end portion thereof, whereby said free end portion may be stretched over said fixed end portion and said band at said fixed end portion may be folded upon itself, thereby insuring that an effective leak proof seal may be obtained, and wherein said seal further includes detachable securing means for detachably securing said free end portion in overlapping relationship with said fixed end portion.

4,363,318

CUSTOM VALVED CERVICAL CAP

Robert A. Goepp, Chicago, and Uwe E. Freese, Oak Park, both of Ill., assignors to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 108,319, Dec. 31, 1979, Pat. No. 4,322,463. This application Jul. 30, 1981, Ser. No. 288,393

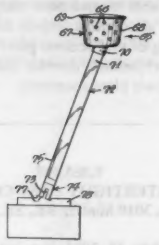
Int. Cl.³ A61F *5/46*

U.S. Cl. 128—130 **15 Claims**

1. An impression tray suitable for making an impression of a cervix uteri which comprises

a hollow cup for receiving the cervix and having a flexible well terminating in a peripheral, outwardly flared anterior lip and a bottom aperture;

a posterior sleeve integral with said cup and surrounding said bottom aperture; and



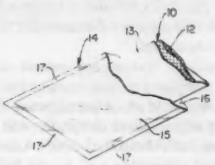
a hollow elongated stem having a proximal end thereof received within said posterior sleeve and defining a passageway communicating with the interior of said cup.

4,363,319

READY-TO-USE BANDAGE INCORPORATING A COAGULANT COMPOSITION AND METHOD OF PREPARING SAME

John H. Altshuler, Englewood, Colo., assignor to Applied Medical Devices, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 164,821, Jun. 30, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,953
Int. Cl.[3] A61L *15/00*
U.S. Cl. 128—156 16 Claims



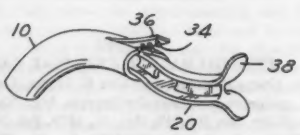
1. A coagulant adaptable for use as a dressing for wounds comprising a solution of 50–2000 units of thrombin per ml of an aqueous solution containing sodium chloride in about isotonic quantities and from 10–50% by weight of a straight chain 3 to 6 carbon fully hydroxylated polyol.

4,363,320

BREATHING AIRWAY

Michael Kossove, 1101 162nd St., Whitestone, N.Y. 11357

Filed Sep. 17, 1980, Ser. No. 187,970
Int. Cl.[3] A61M *25/00*
U.S. Cl. 128—207.14 14 Claims



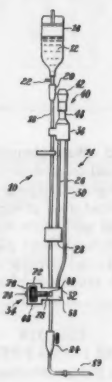
1. An improved breathing array for insertion into the mouth and pharynx comprising a substantially tubular and substantially arcuate first element, a second element having an arcuate portion telescopingly inserted into said first element for sliding engagement to provide a selectable length for said airway, said second element including means for providing fluid flow into said first element, the length of said first and second elements together being such that said airway is adjustable, when in use, to extend from the mouth of a patient and terminate in the region of the throat defined by the pharynx, the curvature of said arcuate elements being approximately that of the mouth and pharynx, and separate mutually engageable securing means on said first and second elements adapted to fixedly secure the first and second elements together at one of a plurality of selectable lengths.

4,363,321

I.V. ADMINISTRATION FLOW RATE GAUGE

Richard M. Chittenden, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 157,919, Jun. 9, 1980, Pat. No. 4,312,342. This application Dec. 18, 1981, Ser. No. 332,070
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214 R 7 Claims



1. An apparatus for the measurement of the rate of flow of medical liquids within a gravitational flow system for the sequential administration of said liquids to a patient comprising:

a primary tube having its distal end in fluid communication with the source of said medical liquid, said primary tube being disposed substantially downwardly therefrom;

a secondary tube having its proximal end in fluid communication with said primary tube;

constrictor means reducing the inside diameter of said primary tube at a selected point and thereby impeding the flow of liquid therethrough;

pressure gauge means for measuring the relative difference in pressure between said secondary tube and said primary tube whereby the rate of flow of said medical liquid may be determined, said pressure gauge means comprising a pressure transducer attached to said secondary tube; and

electrically activated valve means for controlling the rate of flow of liquid through said primary tube.

4,363,322

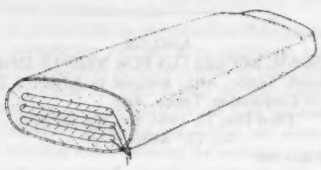
DEODORIZING AND DISINFECTING LIQUID-ABSORBING PRODUCT AND PROCESS FOR PRODUCTION THEREOF

Bror A. E. Andersson, Österängsvägen 24, S-180 10 Enebyberg, Sweden

Filed Apr. 12, 1979, Ser. No. 29,433
Claims priority, application Sweden, Apr. 13, 1978, 7804195; Aug. 28, 1978, 7809038
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—290 R 10 Claims

1. Liquid-absorbing product, which is designed to be able to

be provided with an insert or filler of a material which gives off oxygen in moisture, said product having the form of an essentially rectangular or square pad and comprising one or more layers of absorbent material, and a thin jacket around this material, characterized in that the product is divided into two essentially identical, essentially rectangular or square parts of a



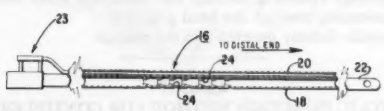
thickness less than that of the product, which are joined along one side of each part by a thin flexible joint in such a manner that the parts can be placed on top of one another by folding the joint and then form the product in the form in which it is to be used, and the material which gives off oxygen in moisture is in direct contact with the absorbent material.

4,363,323

NASOGASTRIC TUBE ADAPTED TO AVOID PRESSURE NECROSIS

Alan C. Geiss, 50 Brampton La., Great Neck, N.Y. 11023

Filed Dec. 4, 1980, Ser. No. 213,028
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—281 **11 Claims**



1. A nasogastric tube, comprising:

an elongated tube having a distal end and a proximal end;

the tube having sufficient length to permit placement of the distal end in a patient's gastrointestinal tract while the tube extends therefrom through the patient's esophagus and nostril to its proximal end outside the patient's body;

the distal end having at least one port for communicating fluids to or from the gastrointestinal tract and the proximal end being adapted for communicating such fluids to or from a device exterior to the patient;

the elongated tube further having an intermediate portion spaced axially from the distal end to extend through the patient's nostril for placement adjacent the patient's nostril when the tube is in place in the gastrointestinal tract for communicating fluids to or from the tract; and

means in said intermediate portion for assuming and retaining an axial bend;

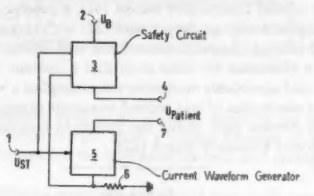
whereby the tube may be fixedly bent to extend from the patient's nostril in a desired direction without affixation to the nose to maintain said bend, to thereby avoid the possibility of pressure necrosis in the nose due to force exerted by the bend in the tube.

4,363,324

ELECTROMEDICAL APPARATUS

Bernd Kusserow, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,097
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935309
Int. Cl.³ A61N *1/18*
U.S. Cl. 128—419 R **15 Claims**



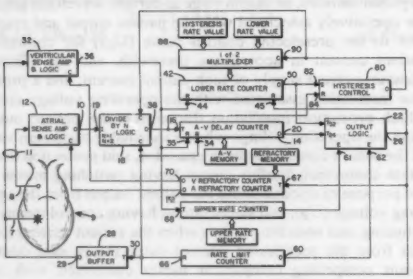
1. Electromedical apparatus, in particular stimulation current apparatus, comprising a patient output, an operating voltage circuit comprising operating voltage input means for supplying an operating voltage (U_B) to the patient output, a control input means for supplying a preselected control value (U_{ST}), a patient current sensing means for supplying a measure of patient current, an output stage as current waveform generator operatively associated with the patient output and responsive to the preselected control value (U_{ST}) for controlling patient current in accordance therewith, and for effecting constant-current supply of such patient current, and a protection installation associated with t[1] e operating voltage circuit which protection installation disconnects the patient output from the operating voltage when a specifiable maximum value of the patient current has been exceeded, said protection installation comprising a safety circuit having switching means for the purpose of disconnecting the patient output from the operating voltage (U_B), said safety circuit having control means for actuating said switching means when the patient current deviates from the preselected control value (U_{ST}), said control means comprising comparator means connected with said patient current sensing means for receiving a measure of patient current and connected with said control input means for receiving a measure of said preselected control value (U_{ST}), the switching means comprising a bistable switching circuit controlled by the comparator means, said bistable switching circuit connecting the patient output with the operating voltage (U_B) in one switching state, and disconnecting the patient output from the operating voltage (U_B) in the other switching state, said comparator means being connected with said bistable switching circuit for controlling switchover of said bistable switching circuit between said one switching state and said other switching state, characterized in that said bistable switching circuit comprises first and second transistor means, said first transistor means (31) being disposed in said operating voltage circuit between said operating voltage input means (2) and said patient output (4), and being conductive in said one switching state of said bistable switching circuit, said second transistor means (32) being nonconducting in said one switching state and being coupled with said comparator means (41) so as to become conductive when the patient current deviates from the preselected control value (U_{ST}), said second transistor means (32) being coupled with said first transistor means (31) so as to render said first transistor means nonconducting and to switch said bistable switching circuit to said other switching state when said second transistor means becomes conducting, said operating voltage circuit having voltage drop means (33) therein for producing a voltage drop as a function of a patient current in the operating voltage circuit, said voltage drop means (33) being connected with said second transistor means (32) such that with a patient current exceeding said

specifiable maximum value said second transistor means (32) is rendered conducting to switch said bistable switching circuit to said other switching state and to thereby render said first transistor means (31) nonconducting and disconnect said patient output from said operating voltage, said voltage drop means (33) being connected with said second transistor means (32) separately from the coupling of said comparator means (41) with said second transistor means (32), so that said voltage drop means (33) is capable of actuating said second transistor means (32) to conducting condition in response to a patient current exceeding said specifiable maximum value independently of said comparator means (41), a passive current path coupling said voltage drop means (33) with control electrodes of said second transistor means (32), said voltage drop means being a resistance of value such that a current therethrough above said specifiable maximum value supplies a voltage to the control electrodes of said second transistor means (32) via said passive current path above the threshold turn-on voltage for said second transistor means (32).

4,363,325
MODE ADAPTIVE PACER

Glenn Roline, Anoka, and Frank Walmsley, New Brighton, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 19, 1981, Ser. No. 226,304
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **4 Claims**



1. A pacer for producing ventricular stimulating pulses at rates between an upper atrial synchronous rate (A) and a lower hysteresis rate (C) in an atrial synchronous mode; when the detected atrial rate lies between said upper atrial synchronous rate and said hysteresis rate, and for producing ventricular stimulating pulses at a ventricular inhibited rate (DB) in a ventricular inhibited mode when the detected atrial rate falls below said hysteresis rate (C) and wherein said pacer returns to said atrial synchronous mode when the detected atrial rate exceeds a preselected atrial rate (B) which is higher than said hysteresis rate (C) but lower than said upper atrial synchronous rate (A); said pacer comprising:

ventricular pulse generator means for producing ventricular stimulating pulses, operated in response to a ventricular pace signal;

first sensing means for detecting atrial depolarizations and for producing an atrial sensed signal;

second sensing means for detecting ventricular depolarizations and for producing ventricular sensed signals;

ventricular escape interval timing means defining a ventricular escape interval responsively coupled to said ventricular sensed signal for producing a ventricular pace signal if no atrial or ventricular sensed signal is produced within said ventricular escape interval;

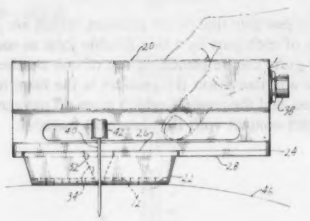
atrio-ventricular escape interval timing means defining an atrio-ventricular escape interval said interval being initiated in response to said atrial sensed signal for producing a ventricular pace signal if no ventricular sensed signal is produced within said atrio-ventricular escape interval;

atrial rate measuring means for preventing said atrio-ventricular escape interval timing means from produced ventricular pace signals if the measured atrial rate is below a hysteresis rate (C) thus preventing atrial synchronized pacing at low atrial rates.

4,363,326
ULTRASONIC APPARATUS FOR NEEDLE INSERTION

LeRoy Kopel, Tempe, Ariz., assignor to Advanced Diagnostic Research Corporation, Tempe, Ariz.

Filed Dec. 22, 1980, Ser. No. 218,512
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **6 Claims**



1. Ultrasonic interrogating apparatus comprising:

an array of ultrasonic transducers;

electronic means for exciting the transducers to ultrasonic emission and receiving ultrasonic echoes from the transducers;

means for connecting said transducers with said electronic means;

means for displaying the ultrasonic echoes received from the transducers;

a hand grip having a first end and a second end;

means for attaching the array of transducers to the hand grip in offset relationship from the first end thereof;

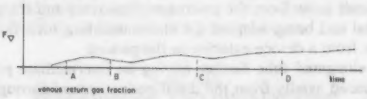
a passage extending through the transducer array without extending through the hand grip; and

a needle slidably inserted into the passage.

4,363,327
CYCLIC INJECTION METHOD FOR CONTINUOUS MEASUREMENTS OF PULMONARY PARAMETERS

Justin S. Clark, Salt Lake City, Utah, assignor to Intermountain Health Care, Salt Lake City, Utah

Filed Aug. 22, 1980, Ser. No. 180,369
Int. Cl.³ A61B *5/08*
U.S. Cl. 128—719 **17 Claims**



1. In a method of sampling and analyzing alveolar air is a human subject without requiring an airtight seal between the subject and monitoring equipment to determine alveolar ventilation by means of injecting a known amount of an insoluble inert tracer gas into the airway of a subject by non-airtight means, during inspiration and directly sampling expired alveolar air by non-airtight means and monitoring the inert tracer gas concentration in expired air under steady state conditions to determine alveolar ventilation, the improvement which

consists of determining additional pulmonary parameters, comprising the steps of:

(a) directly introducing the known amount of insoluble inert tracer gas during each inspiratory cycle for a given period of time designated as a washin cycle and then halting the introduction of such gas for a given period of time designated as a washout cycle,

(c) simultaneous with the introduction of the insoluble tracer gas, introducing one or more additional tracer gases which are at least partially soluble in blood for the same washing cycle and then halting the introduction of said soluble tracer gas or gases for the same washout cycle,

(c) continuously repeating said washin and washout cycles and sampling and monitoring the insoluble and soluble gas fractions in sampled expired alveolar air, and

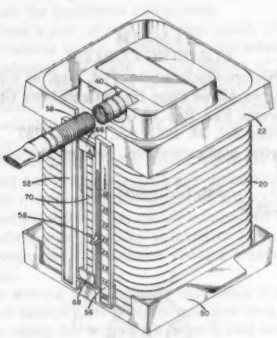
(d) utilizing the monitored data to determine the desired pulmonary parameter.

4,363,328

INHALATION EXERCISER

Victor L. Poirier, Chelmsford; Stanley D. Buczak, Billerica; Robert F. Lynch, Newburyport, and Thomas R. Salvo, Brookline, all of Mass., assignors to Thermo Electron Corp., Waltham, Mass.

Filed Nov. 5, 1980, Ser. No. 204,102
Int. Cl.[3] A61B *5/08*
U.S. Cl. 128—728 **8 Claims**



1. An inhalation device comprising:

a top housing member;

a bellows including an upper end attached to said top housing member and a lower end, said lower end being movable during use between an extended bellows position remote from said top housing member and a retracted bellows position adjacent to said top housing member, said lower end also being retainable in said retracted bellows position for facilitating storage of the device in compact form;

means for permitting withdrawal of air from the interior of said bellows;

means for measuring the volume of air withdrawn from said bellows;

a bottom housing member mounted in opposed relationship to said top housing member such that the bellows is positioned therebetween, said bottom housing member and said top housing member each including a tab projecting from each of two opposed sides thereof; and

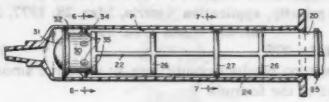
a pair of side arms supportably connecting said bottom housing member and said top housing member, each of said arms having an elongated slot therein receiving and slidably retaining one of the tabs of each of said housing members.

4,363,325

SYRINGE HAVING A REVERSE-TAPER BARREL

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Filed Mar. 13, 1978, Ser. No. 885,496
Int. Cl.[3] A61B *5/14*
U.S. Cl. 128—765 **8 Claims**



1. A disposable syringe particularly suited to be used for obtaining a blood sample from a patient because of the low force requirement for the operation thereof, said syringe comprising:

a barrel having a generally cylindrical inner wall comprising a working section thereof extending from a forward end of said barrel to a predetermined point, the inner diameter of said working section of said barrel being tapered radially inwardly in a direction from the forward end portion of said barrel toward said predetermined point; and

a plunger comprising a plunger stem and a generally cylindrical plunger tip having an annular, elastically deformable wiper extending peripherally to engage said tapered working section of the inner wall to form a seal;

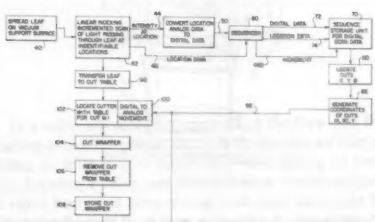
wherein said syringe assembly comprises means for preventing further inward movement of said plunger to define a chamber having a predetermined volume for retaining a desired quantity of anticoagulant.

4,363,330

METHOD, SYSTEM AND APPARATUS FOR CUTTING PROFILES FROM NATURAL LEAVES

Robert I. Sinclair, Mendham, N.J.; Verner Anderson, Berwick, Pa.; David J. Logan, Glastonbury, and Leonard G. Rich, West Hartford, both of Conn., assignors to Gulf & Western Corporation, New York, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,849
Int. Cl.[2] A24C *1/00, 1/02, 1/04*; G05B *19/10*
U.S. Cl. 131—105 **37 Claims**



32. A method of making a flat profile having a preselected shape from a natural leaf having surface variations and defects detectable by light rays, said method comprising the steps of:

(a) supporting said leaf in a spread condition on a support surface at a random location;

(b) creating a leaf profile remote from said leaf and including an edge outline and surface imperfections;

(c) locating at least one cut location within said edge outline and excluding said surface imperfections; and,

(d) cutting said flat profile from said natural leaf at a cut position corresponding to said cut location.

4,363,331

TOBACCO PRODUCTS CONTAINING OXYGENATED IONONE DERIVATIVES

Roman Kaiser, Uster, and Dietmar Lamparsky, Wangen-Dubenoor, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

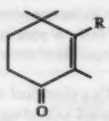
Division of Ser. No. 68,801, Aug. 22, 1979, Pat. No. 4,311,718, which is a division of Ser. No. 889,070, Mar. 22, 1978. This application Aug. 28, 1981, Ser. No. 297,447

Claims priority, application Austria, Mar. 28, 1977, 2158/77

Int. Cl.³ A24B *3/12, 15/30*

U.S. Cl. 131—275 9 Claims

1. A tobacco product comprising an effective amount of a compound of the formula



(I)

wherein R represents a butyl but-2-enyl or 1,3-butadienyl group, with the exception that the compound is not added as part of a naturally occurring mixture.

4,363,332

DETECTION OF ROD-LIKE ARTICLES

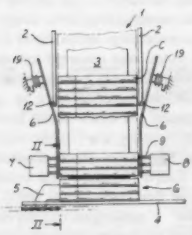
Edward G. Preston, and Jan A. Rakowicz, both of London, England, assignors to Molins Limited, London, England

Filed Mar. 17, 1980, Ser. No. 130,956

Claims priority, application United Kingdom, Mar. 21, 1979, 7909918

Int. Cl.³ A24C *5/00, 5/35*

U.S. Cl. 131—282 13 Claims



1. In apparatus for forming groups of cigarettes comprising a cigarette hopper, and an ejection pusher at the bottom of said hopper for ejecting successive groups of cigarettes therefrom, the improvement of a device for detecting said groups of cigarettes, said device being mounted at a side of said hopper above said ejection pusher and comprising a plurality of plungers engageable with the ends of a group of cigarettes, a body in which said plurality of plungers are mounted for independent movement, the body being fixed in a direction axial of the plungers, pneumatic means operable on the plungers to move each plunger against the end of the respective cigarette of said group, and piezoelectric transducer means to detect movement of any plunger beyond a predetermined distance into said group.

4,363,333

TOBACCO-SMOKE FILTERS

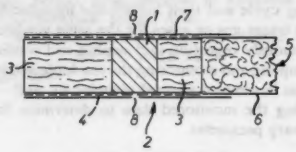
David A. Matkin, Southampton, England, assignor to British-American Tobacco Company Limited, London, England

Filed Nov. 3, 1980, Ser. No. 203,424

Claims priority, application United Kingdom, Nov. 13, 1979, 7939185; Jun. 13, 1980, 8019460

Int. Cl.³ A24D *3/00, 3/08, 3/16*

U.S. Cl. 131—334 16 Claims



1. A nitric oxide filtration material which comprises; activated carbon upon which has been adsorbed a C-nitroso compound, said compound having at least one nitroso group which will react to remove said nitric oxide.

4,363,334

COMBING CURLER

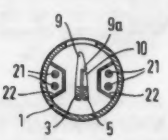
Frank Popp, Niefern-Öschelbronn, Fed. Rep. of Germany, assignor to Forfex Alfred Popp Haarpflegegerate GmbH, Niefern-Öschelbronn, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,787

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029619

Int. Cl.³ A45D *2/12*

U.S. Cl. 132—33 R 17 Claims



1. In a combing curler comprising

a curler tube formed with a longitudinal slot,

a dressing comb extending longitudinally in said curler tube and having teeth adapted to protrude through said slot, and

advancing spring means accommodated in said curler tube and urging said dressing comb to a position in which said teeth protrude from said slot,

said teeth being adapted to be entirely retracted into said curler tube against the force of said advancing spring means,

the improvement residing in that

a clamping comb is provided, which extends longitudinally in said curler tube and parallel to said dressing comb and has teeth adapted to protrude through said slot and is urged by said advancing spring means to a position in which the teeth of said clamping comb protrude from said slot, and

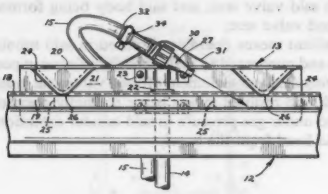
said teeth of said clamping comb are adapted to be entirely retracted into said curler tube against the force of said advancing spring means.

4,363,335

GUTTER CLEANER

William R. Tapper, 3935 Walden La., Wayzata, Minn. 55391

Filed May 21, 1981, Ser. No. 265,855
Int. Cl.³ B08B 9/00
U.S. Cl. 134—167 C 10 Claims



9. A device for cleaning leaves and other debris from eave troughs and similar gutters which comprises:

(A) a longitudinally movable carrier adapted for engagement with the forward lip of an eave trough, said carrier including:

(1) a horizontal component,

(2) a first vertical component extending downwardly from the outer edge of said horizontal component, said horizontal and first vertical carrier components being rigid plates joined along a common longitudinal edge, and

(3) a second rigid vertical component extending upwardly from the horizontal component,

(B) at least a pair of skid or runner guide means formed as indentations in the horizontal component of the carrier and adapted to engage the top surface of the trough lip,

(C) at least a pair of skid or runner guide means formed as indentations in the first vertical component of the carrier and adapted to engage the outer trough wall adjacent to the lip,

(D) an elongated handle connected at its top end to said carrier and extending vertically downward therefrom,

(E) hose clamping means supported from the inside surface of said second vertical carrier component and comprising:

(1) afirst arm pivotally secured to said second vertical component for rotation about a transverse horizontal axis,

(2) a second longitudinally extending arm connected to and laterally off-set from said first arm, and

(3) a clamp for securing a hose to said second arm, and

(F) a high pressure water nozzle adapted to be connected to the end of the hose held by said clamping means to extend longitudinally relative to said carrier and positioned to overlie the trough.

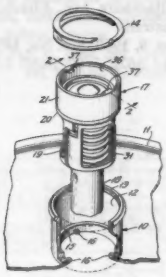
4,363,336

KEG-TAPPING STRUCTURE

Vincent J. Cerrato, Pomona, N.Y., assignor to Vending Components, Inc., Hackensack, N.J.

Filed Apr. 7, 1981, Ser. No. 251,955
Int. Cl.³ F16K 35/00
U.S. Cl. 137—212 8 Claims

1. In structure adapted for removable connection of a tapping unit to a keg, wherein the keg has a cylindrical annular neck with a bore having near its upper end a circumferential groove adapted to removably receive a retaining ring and with a seal-seating radially inward flange near the lower end of the bore; and wherein a valve and down-tube subassembly is removably receivable in said neck with the down-tube thereof projecting through and downwardly of said flange, the valve of said subassembly comprising an annular seat seated at the upper end of said tube and means including an upper annular housing, a compression spring and an elongate lower annular cup surrounding and compressionally loading the engagement of said seat and tube, the improvement in which the inner contour of said flange is characterized by one or more integral radially inward lugs, and in which said cup has one or more longitudinal slots engageable with said lugs on tube insertion through said neck, each slot terminating in an angular bayonet offset and in a further longitudinally upward offset, whereby subassembly insertion involves a first lug-keyed longitudinally downward displacement followed by angular rotation through



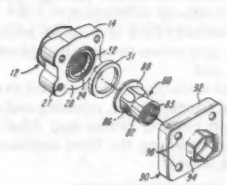
the bayonet offset and ending with a second lug-keyed longitudinally downward displacement, so that independent of any retention of said subassembly via a retaining ring in said groove, the longitudinally limited extent of lug engagement in the further slotted-offset relation will assure against removal or expulsion of said subassembly, in the absence of a deliberate bayonet-dislocating angular displacement.

4,363,337

FLUID CONTROL VALVE AND INLET FITTING ASSEMBLY

James F. Pease, 5805 Folkestone Dr., Dayton, Ohio 45459

Continuation-in-part of Ser. No. 25,869, Apr. 2, 1979, Pat. No. 4,266,567, which is a continuation-in-part of Ser. No. 818,433, Jul. 25, 1977, Pat. No. 4,149,554. This application Apr. 8, 1981, Ser. No. 252,074
Int. Cl.³ F16K 51/00; F16L 3/00
U.S. Cl. 137—343 17 Claims



1. In a valve assembly for controlling the flow of a fluid and including a molded plastic valve body having an inlet portion defining an inlet and an outlet portion defining an outlet and means forming a valve seat therebetween, means supported by said valve body and cooperating with said valve seat for controlling the flow of fluid from said inlet to said outlet, a metal fitting including a tubular threaded portion projecting from an integral flange portion disposed adjacent said inlet portion of said valve body, means forming a fluid-tight seal between said flange portion and said inlet portion of said valve body, a sheet metal retaining bracket having an aperture aligned with said tubular portion of said fitting, and means for securing said bracket to said valve body, the improvement wherein said fitting comprises a drawn sheet metal tubular fitting including a tubular portion integrally connecting said flange portion to said tubular threaded portion, said connecting portion having a non-circular cross-sectional configuration, said retaining bracket including an axially projecting drawn sheet metal tubular socket portion defining said aperture and having a

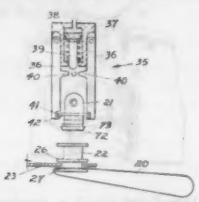
non-circular cross-sectional configuration, and said socket portion closely surrounding said tubular connecting portion of said fitting and cooperatively shaped to prevent rotation of said fitting relative to said retaining bracket.

4,363,338

LIQUID FILLING MACHINE

Albert M. Brown, 3 Blackburn Ave., Elizabeth South, State of South Australia, Australia

Filed Sep. 8, 1980, Ser. No. 185,156
Int. Cl.³ B67C *7/00*; B65B *3/04*
U.S. Cl. 141—2 **11 Claims**



11. A method of filling, with liquid, a container of the type which has a dispensing closure axially movable into or out of a flanged sleeve, comprising:

locating the sleeve on sleeve retaining means so as to releasably retain the sleeve in a position fixed relative to a frame of a liquid filling machine,

lowering closure grip means of a head assembly of said machine from an upper level to an intermediate level over said closure and gripping said closure with said grip means,

raising said closure grip means vertically to said upper level to remove said closure from said flanged sleeve, moving said closure grip means in a horizontal plane away from alignment with said flanged sleeve and at the same time bringing a filling head into alignment therewith,

lowering said head assembly to said intermediate level and thereby bringing said filler head into sealable engagement with an upper surface of said flanged sleeve,

evacuating air from said container through said filler head, and filling the container with liquid,

lifting said head assembly back to its upper level and returning said closure grip means to vertical alignment with said flanged sleeve, and

lowering said head assembly to a lower level to reinsert said closure into said flanged sleeve, releasing said closure grip means from said closure, raising said filler head to its upper level, and removing the filled container from said sleeve retaining means.

4,363,339

FILLING VALVE ARRANGEMENT FOR COUNTER-PRESSURE CONTAINER FILLING APPARATUS

Stanley J. Puskarz, Clearwater, Fla., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Apr. 9, 1981, Ser. No. 252,341
Int. Cl.³ B65B *31/00*; B67C *3/06*
U.S. Cl. 141—39 **15 Claims**

6. A filling valve arrangement for counterpressure container filling apparatus in which a bowl for holding a liquid under pressure from a gas for delivery to a container is provided with a bottom outlet, said filling valve comprising:

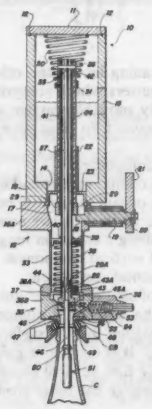
(A) a base positioned in the bottom outlet of the bowl and supporting a movable primary sleeve projecting into the bowl to position with its end above the liquid level;

(B) a tubular extension depending from said base and communicating with the bowl through said base for receiving liquid from the bowl;

(C) a filling head connected to said tubular extension and formed with a valve seat and a flow passage extending outwardly from said valve seat;

(D) a secondary sleeve disposed inside said primary sleeve and extending from an open end above the liquid level in the bowl to an opposite end adjacent said valve seat, said secondary sleeve carrying a body at its opposite end which is carrying a valve element in position to cooperate with said valve seat, and said body being formed with a second valve seat;

(E) resilient means operably disposed in said tubular extension and connected to said secondary sleeve in position for moving said valve element off said valve seat in said filling head; said resilient means being normally opposed by the liquid under gas pressure in said tubular extension and the liquid head from the bowl;



(F) gas flow control means disposed in said secondary sleeve and extending from one end operatively connected to said primary sleeve to a valve end cooperating with said second valve seat, said gas flow control means being movable with said primary sleeve and independent of said secondary sleeve;

(G) operating means in said base in position for initiating movement of said primary sleeve in a direction to move said gas flow control means for opening said second valve seat to release gas therethrough;

(H) and a gas vent tube connected to said body carried by said secondary sleeve, said vent tube extended through said filling head flow passage and to a position therebeyond for entering a container to receive the liquid.

4,363,340

APPARATUS FOR COLLECTING FLUIDS

Henry Naftulin, 8341 N. Kenton Ave., Skokie, Ill. 60076

Filed May 21, 1981, Ser. No. 263,474
Int. Cl.³ B65B *31/02*; A61M *1/00*
U.S. Cl. 141—51 **11 Claims**

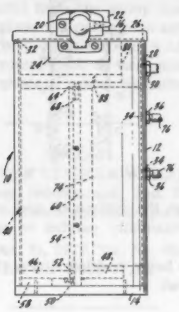
1. Apparatus for collecting and storing biological fluids in a flexible container, comprising:

(a) a rigid outer chamber having a fluid inlet opening and a vacuum port, said flexible container being disposed within said outer chamber in communication with said fluid inlet opening for receipt of fluid therein upon creation of a vacuum within said outer chamber through said vacuum port;

(b) inner chamber means disposed within said outer chamber for receipt of said flexible container therein, said inner chamber being split into at least two segments which are movable between a closed position and an open position, said inner chamber means defining a smaller volume when in its closed position than when in its open position;

(c) bladder means disposed within said outer chamber between

said inner chamber means and said outer chamber, the interior of said bladder means being in communication through an opening in said outer chamber with the atmosphere so as to cause said bladder means to expand and fill a space between said inner chamber and said outer chamber upon the application of a vacuum to said outer chamber so as to exert a pressure on said inner chamber sections and thereby move said sections toward one another into its closed position; and



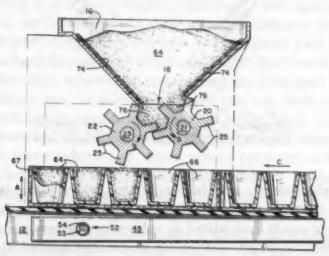
(d) retainer means depending downward from the underside of a lid member, said lid member being pivotally mounted to said outer chamber adjacent to the upper end thereof so as to close off the upper end of said outer chamber when in its closed position, said retainer means extending downward towards said inner chamber means and being effective to limit the expansion of said flexible container.

4,363,341

PLANT CONTAINER FILLING MACHINE

Calvin F. Powell, 100 N. H St., Oxnard, Calif. 93030

Filed Jan. 21, 1981, Ser. No. 226,799
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—78 **10 Claims**



1. A system for continuously metering predetermined amounts of particulate matter to moving containers comprising

an overall framework;

a conveyor mounted on said framework;

a hopper having an outlet located above said conveyor, said hopper including first and second rotating wheels having radially extending blade members closing said outlet; and,

drive means connecting said conveyor and wheels to regulate the movement thereof, said wheels being spaced apart from each other a distance sufficient to allow overlap of corresponding blade members on each respective wheel, said hopper including a resilient portion extending into said outlet a distance sufficient to allow contact with at least one of said blades.

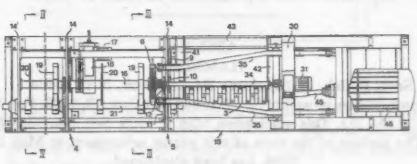
9. The system of claim **1** including means for agitating containers of particulate material on said conveyor comprising a frame located beneath the conveyor and connected to said overall framework at one end with a resilient connector and having a free end connected to said framework by an eccentric means which is supported by a rotatable shaft journaled to said frame whereby rotation of said shaft will cause the angular displacement of said frame against said conveyor or containers.

4,363,342

LOG MILLING APPARATUS

Harding Tannerstal, Söderhamn, Sweden, assignor to Bruks Mekaniska AB, Arbra, Sweden

Filed Jun. 6, 1980, Ser. No. 157,036
Int. Cl.³ B27C *9/00*
U.S. Cl. 144—2 R **21 Claims**



1. A log milling apparatus comprising,

means for receiving a log and supporting the same from below with the swelled root end thereof overhanging therefrom, said receiving means having spaced apart first and second ends defining the length thereof,

means for rotating said log relative to said receiving means, and

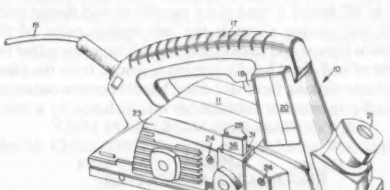
a milling cutter arranged beside said receiving means and under said overhanging root end of said log so as to machine said overhanging swelled root end of said log from below and along a line which is located in the extension of the length of said receiving means.

4,363,343

COMBINATION GUARD AND RABBETING DEPTH GAUGE ASSOCIATED WITH POWER PLANER

Giuseppe Cuneo, Calolziocorte, Italy, assignor to Black & Decker Inc.

Filed Sep. 24, 1980, Ser. No. 190,228
Int. Cl.³ B27C *1/10*; B27G *21/00*; B27C *1/14*
U.S. Cl. 145—4 **12 Claims**



1. A portable handheld planer for planing a workpiece, comprising:

a housing containing a substantially cylindrical planing tool rotatably mounted for rotation about a horizontal axis;

a motor supported by said housing for driving the planing tool;

shoe means, connected to said housing, for supporting the planer on the workpiece, and in conjunction with said planing tool determining the size of the cut produced by each pass during the planing operation;

guard means, disposed adjacent the planing tool, for block-

ing access to one end thereof during the planing operation, said guard means being connected to the housing for movement relative to said shoe means in a direction transverse to said horizontal axis;

resilient means for resiliently urging said guard means downwardly for engagement with an unplaned portion of the workpiece and yieldably allowing upward movement of said guard means relative to said shoe means while a rabbet is being cut;

stop means for controlling the extent to which the guard means can be moved upwardly to set the depth to which the completed rabbet will be cut; and

adjustment means for adjusting the position of said stop means whereby said depth of the rabbet can be adjusted to any value within a predetermined range of values.

4,363,344

HAMMER

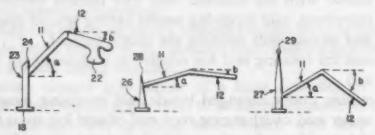
I. Scott Pollak, 14 Greenway Rd., Armonk, N.Y. 10504

Continuation-in-part of Ser. No. 869,060, Jan. 13, 1978, Pat. No. 4,154,273. This application May 9, 1979, Ser. No. 37,344

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.³ B25C *1/00*

U.S. Cl. 145—29 R **12 Claims**



1. A hammer comprising a head having on one end a planar striking face, a proximal handle portion rigidly secured at its inner end to said head and angularly disposed to said face, and a distal handle portion angularly and rigidly secured at its inner end to the outer end of said proximal handle portion, said handle portions and head having given lengths and being disposed in a first plane that is perpendicular to said planar striking face, said proximal handle portion describing a proximal angle from 10° to 80° above a second plane parallel to said planar striking face and passing through the intersection point of said head and the longitudinal axis of said proximal handle portion, said distal handle portion describing a distal angle from 5° to 80° below a third plane parallel to said planar striking face and passing through the intersection point of the longitudinal axes of said handle portions, all being such that the outer end of said distal handle portion is spaced from the plane of said planar striking face, said distal handle portion constituting a hand-grip member for hammer manipulation by a user.

4,363,345

RECLOSABLE CONTAINER

Gerald H. Scheibner, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 155,233, Jun. 2, 1980, abandoned. This application Nov. 18, 1981, Ser. No. 322,722

Int. Cl.³ B65D *33/24*

U.S. Cl. 150—3 **14 Claims**

1. In a container having a reclosable end, comprising flexible first and second sidewalls, and a closure fastening device including first and second closure profiles positioned on respective first and second sidewalls and operable for being occluded and disengaged with respect to each other to close and open said container,

said first sidewall extending beyond the end edge of said second sidewall at said reclosable end; the improvement which comprises:

first and second ridges spaced apart from each other on the surface of said first sidewall and arranged substantially parallel to said first closure profile;

said first ridge being positioned near the end edge of said first sidewall, and said second ridge being positioned substantially opposite the end edge of said second sidewall when said closure profiles are occluded; and

a third ridge on the surface of said second sidewall and arranged substantially parallel to said second closure profile;

said third ridge being positioned near the end edge of said second sidewall.

4,363,346

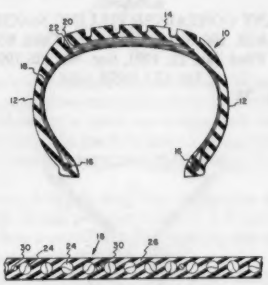
PNEUMATIC TIRE INCLUDING GAS ABSORBING CORDS

Richard J. Pepe, Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 23, 1981, Ser. No. 304,729

Int. Cl.³ B60C *9/04*; B29H *17/28*; B32B *25/02*

U.S. Cl. 152—356 R **10 Claims**



1. An elastomeric article comprising at least one reinforcement ply wherein said reinforcement ply includes a plurality of reinforcing cords embedded in rubber or rubber-like material, said reinforcing cords extending in parallel spaced apart relation; the improvement wherein said reinforcing ply further includes a plurality of gas absorbing cords, each gas absorbing cord extending parallel to and being disposed between a pair of reinforcing cords in spaced relation thereto, each gas absorbing cord lying generally in the same plane as that defined by the reinforcing cords on opposite sides thereof, each gas absorbing cord consisting of a multiplicity of staple filaments of a material or materials selected from the group consisting of nylon, rayon, polyester or glass and being of a diameter no greater than one-third the diameter of one of said reinforcing cords and having a break strength no greater than about 10 percent the break strength of one of said reinforcing cords, each gas absorbing cord being completely surrounded by rubber or rubber-like material, said gas absorbing cords being located alongside only every third to sixth reinforcing cord.

8. A method of manufacturing an elastomeric article containing at least one reinforcement ply comprising locating in a common plane a plurality of reinforcing cords in parallel

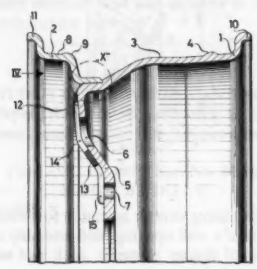
spaced apart relation; locating alongside only every third to sixth reinforcing cord a gas absorbing cord with the gas absorbing cord being in parallel spaced relation to and lying in the same general plane as that of the reinforcing cords on opposite sides thereof and with said gas absorbing cord being of a diameter no greater than about one-third the diameter of one of said reinforcing cords and having a break strength of no greater than about 10 percent of one of said reinforcing cords and consisting of a multiplicity of staple filaments of one or more materials selected from the group consisting of nylon, rayon, polyester or glass; and passing the array of reinforcing cords and gas absorbing cords through a calender to embed and completely surround each of said reinforcing and gas absorbing cords in rubber or rubber-like material to form said reinforcement ply.

4,363,347

MOTOR VEHICLE WHEEL

Heinrich Baumgartner, Schenkenzell, Fed. Rep. of Germany, assignor to BBS-Kraftfahrzeugtechnik GmbH, Schiltach, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,770
Int. Cl.[3] B60B *21/02*
U.S. Cl. 152—411 8 Claims



1. A motor vehicle wheel having a wheel disc and a rim bed for mounting a tire, said wheel consisting of two permanently connected, preformed parts composed of distinct materials, one wheel part comprising a single integral inner part forming both the wheel disc and the inner and larger portion of the rim bed and the other wheel part comprising an outer part forming the remaining and smaller portion of the rim bed, said two wheel parts being connected together along their respective rim bed portions to provide a complete rim bed, wherein

(a) said inner wheel and outer wheel parts are connected together in an air-tight manner, without soldering or welding, by contiguous and continuous connection surfaces comprising a generally annular connection surface formed on one wheel part and a complemental generally annular connection surface formed on the other wheel part;

(b) the two wheel parts consist of similar light metal alloys constituted of the same base metal but of different alloying elements, whereby the creation of a corrosion inducing electrolytic effect between the inner and outer wheel parts, which would impair the integrity of the air-tight connection between said two parts, is prevented;

(c) the light metal alloy of the inner wheel part has a relatively higher tensile strength and a relatively lower resilience than the light metal alloy of the outer wheel part to enable said inner wheel part to transmit forces from the tire inwardly through the rim bed and the wheel disc to the hub of the wheel without interruption; and

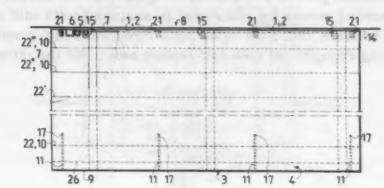
(d) the light metal alloy of the outer wheel part has a relatively lower tensile strength and a relatively higher resilience than the light metal alloy of the inner wheel part to enable said outer wheel part to absorb shock forces occurring when the wheel is in use.

4,363,348

LIFT WALL PROVIDED WITH LIFTING MACHINERY

Hämäläinen Heikki, SF-31300 Tammela, Finland

Filed Jul. 21, 1981, Ser. No. 285,529
Claims priority, application Finland, May 22, 1981, 811590
Int. Cl.[3] A47H *5/00*
U.S. Cl. 160—84 R 7 Claims



1. A lift wall provided with lifting machinery, comprising

two wall cloths each made of resilient material and suspended by their upper edges from a ceiling with substantially constant mutual spacing;

lower edge means to which lower edges of both wall cloths are attached;

lifting means provided with power means and at least two rope-like lifting members affixed to said lower edge means for lifting and lowering the wall with the aid of said lifting means driven by said power means and supported by said lifting members;

a ceiling module to which said wall cloths are attached and in which said lifting means with its said power means are accommodated;

said lift wall with said ceiling module constituting a unitary entity mountable on the ceiling;

said lower edge means comprising an elongated lower edge element in the horizontal plane and parallelling the wall, and to which said wall cloths and said lifting members are affixed;

a lower edge connector element; and

two elongated lower bracing arms parallelling said lower edge element and connected to said lower edge element by the aid of linkage arms thereto pivotally attached in a vertical direction at right angles to the plane of the wall to be displaceable with reference to said lower edge elements parallelly upward and in braced fashion to either side, and bracing arms been placed between said wall cloths in such manner that said cloths are folded to the sides, supported by said bracing arms, when said lower edge element is lifted up with the aid of said lifting members.

4,363,349

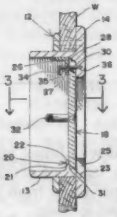
SASH PORTLIGHT FOR MARINE USE

John M. Childs, 13031 Deva St., Coral Gables, Fla. 33156

Filed Oct. 30, 1980, Ser. No. 202,274
Int. Cl.[3] E06B *9/00, 5/00, 3/60*
U.S. Cl. 160—90 9 Claims

1. A sash portlight for marine use, comprising, in combination, a rectangular frame member, said frame member being integrally formed with a tubular spigot portion defining a rectangular through opening, said tubular spigot portion having integrally formed therewith, about its outer periphery, a perpendicularly-outwardly-extending flange, a rectangular sash light receivable within the said rectangular through opening, said flange comprising a perpendicularly-inwardly-extending top portion and opposed perpendicularly-inwardly-extending side portions serving as abutment surfaces for marginal outer surface portions of said sash light upon installation in said frame member, means defining a longitudinal groove at the inside upper wall portion of said spigot portion and comprising said perpendicularly-inwardly-extending top portion of said flange, means along the inside lower wall portion of said spigot

portion and extending upwardly thereof for seating a lower marginal end portion of said rectangular sash light upon its installation in said frame member, said seating means being vertically opposed to said longitudinal groove means, the width of said longitudinal groove and the top-to-bottom overall height of said sash light being such as to permit the insertion of an upper marginal portion of said light upwardly within said longitudinal groove and a lower marginal portion thereof over said seating means for placement in abutment with said abutment surfaces and, after subsequent downward movement, in abutting engagement with said seating means for the retention



in place of said sash light in said frame member, said seating means comprising a rectangular upper end portion merging, at the outside, with a longitudinally-extending, downwardly and outwardly-directed, beveled surface portion extending through to the outer surface of the bottom portion of said flange, said sash light being beveled along its lower edge to define an angle of inclination substantially equal to that of said beveled surface portion, whereby, upon the seating of said sash light in place upon its installation in said frame, its beveled edge will seat face-to-face in abutting engagement against said beveled surface portion of said seating means.

4,363,350

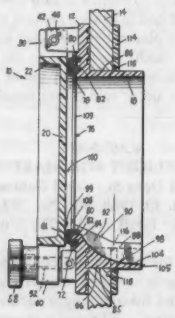
SELF-DRAINING BOAT WINDOW

Frank S. Beckerer, 134 Far Horizons Dr., Easton, Conn. 06612

Filed Nov. 3, 1980, Ser. No. 203,046

Int. Cl.[3] E06B *7/14*

U.S. Cl. 160—92 **13 Claims**



1. In a self-draining, leak-resistant boat window, in combination:

(a) a frame body comprising a continuous mounting flange for engagement with an inner surface surrounding an opening in the wall of a boat,

(b) said body including a spigot connected with said flange and defining the window opening and having a lower portion characterized by an upwardly-facing drain surface constituting a sill, said spigot being adapted to extend through said wall opening of the boat,

(c) a window pane for closing off the window opening formed by the spigot, and

(d) means hingedly connecting said window pane to said mounting flange,

(e) said sill of the spigot having a portion which is downwardly offset with respect to remaining areas of the sill, said downwardly offset portion being provided with a sloping drain groove extending from a high location closely adjacent said mounting flange to a low location disposed remote from the mounting flange

(f) said drain groove being open at the top for a substantial portion of its length, thereby defining an open channel which resists the tendency for residue to form therein and cause possible clogging.

4,363,351

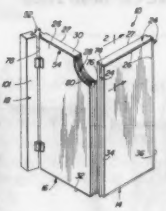
THERMAL INSULATING SHUTTER ASSEMBLY

George Eriksen, 201 E. Hopkins, Aspen, Colo. 81611

Filed Mar. 10, 1980, Ser. No. 129,018

Int. Cl.[3] E05D *15/26*; E04C *1/16*

U.S. Cl. 160—187 **1 Claim**



1. A thermal insulating shutter assembly for selective covering of the interior of a wall opening, said assembly comprising:

at least one set of shutter elements, each said set including first and second shutter elements;

each said shutter element comprising a pair of spaced, substantially parallel panel members having congruent end edges, peripheral end means interconnecting the end edges of said panel members to form top and bottom end members interconnected by oppositely disposed side members and to define an enclosed interior chamber therewithin, core means centrally disposed between and spaced from said panel members within said chamber and bounded on all sides by said peripheral end means for providing thermal insulation and to define an enclosed, dead air space between said core means and each said panel member, said core means and panel members being formed so as to define the size and shape of said dead air spaces to prevent convection currents from forming therewithin and being sufficiently sealed to substantially prevent condensation within said dead air spaces, and thermal reflective means disposed on the outer surfaces of said core means for substantially preventing thermal radiant energy loss, said reflective means being spaced from and facing the inner surfaces of said panel members;

a shutter jamb element for supporting said set of shutter elements and adapted for mounting adjacent said wall opening;

elongated tongue means disposed along the length of one side member of each said shutter element;

channel means disposed along the length of said jamb element and along the length of the other side member of said second shutter element for receiving the tongue means of said second and first shutter elements, respectively, when said shutter assembly is in a closed position wherein said jamb element and said shutter elements of said set of elements are in substantially co-planar alignment and covering said wall opening, said channel means including a layer of insulation along the bottom thereof adapted to

be compressed by and flow around said tongue member when engaged within said channel means to provide firm mechanical and thermal sealing of said assembly when in said closed position;

first hinge means interconnecting said jamb element and said second shutter element to permit pivotal movement of said second shutter movement relative to said jamb element between said closed position and an open position wherein said second shutter element is disposed adjacent the inner face of said jamb element substantially parallel to said wall;

second hinge means interconnecting said first and second shutter elements to permit pivotal movement of said first shutter element relative to said second shutter element between said closed position and said open position wherein said first shutter element is disposed adjacent and congruent with said second shutter element;

lap joint means disposed along the length of the other side member of said first shutter element for sealing and locking said first shutter element in said closed position; and

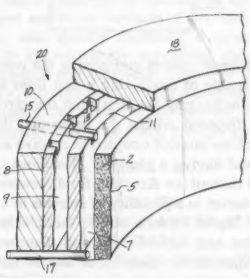
a layer of insulation disposed along said top and bottom end members of each said shutter element to provide thermal sealing in said closed position, said insulation creating in conjunction with said tongue and channel means insulation an enclosed, substantially sealed air space between said shutter assembly and said window to reduce thermal energy conduction losses.

4,363,352

CONTINUOUS LUBRICATION CASTING MOLDS

Michael J. Pryor, Woodbridge, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 15, 1979, Ser. No. 84,768
Int. Cl.³ B22D *11/07*
U.S. Cl. 164—418 **4 Claims**



1. A casting apparatus for continuously casting molten metals or alloys comprising:

a continuous lubrication casting mold, said casting mold including a permeable casting mold section having an inner casting surface, a molten metal or alloy inlet end and an outlet end;

said permeable casting mold section comprising a porous body having a continuous open pore fraction associated therewith for establishing passages for lubricant, said open pore fraction of said casting mold section varying along the length thereof so that said open pore fraction of said casting mold section is larger at said molten metal or alloy inlet end of said casting mold section as compared to said outlet end of said casting mold section; and

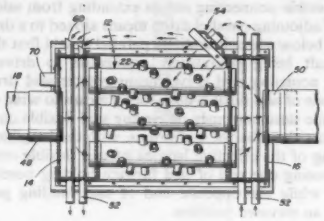
means for supplying lubricant to said permeable casting mold section along substantially its entire length whereby lubricant continuously transfers onto said inner casting surface along substantially the entire length thereof.

4,363,353

EXHAUST PIPE HEAT EXCHANGER

Ronald B. Prasaitis, 2525 E. 223rd St., Sayk Village, Ill. 60411

Filed Aug. 8, 1980, Ser. No. 176,779
Int. Cl.³ F28D *7/02*
U.S. Cl. 165—39 **15 Claims**



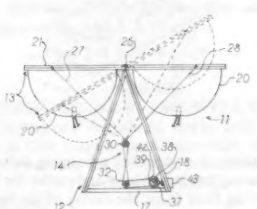
1. A heat exchange unit for connection in the exhaust line of a fuel burning apparatus comprising: an elongated tubing section having an inlet end and an outlet end; a plurality of exchange tubes disposed between an inlet plenum and an outlet plenum, each of said exchange tubes being further disposed transversely through said elongated tubing section with said exchange tubes, being spaced longitudinally of said tubing section, and further wherein adjacent ones of said exchange tubes are offset with the ends of said exchange tubes being disposed in a helical conformation longitudinally of the tubing section, and second heat exchange tubes being disposed transversely of each of said inlet and outlet plenums.

4,363,354

SOLAR FURNACE SUPPORTING APPARATUS

Benjamin W. Strickland, Box 30, Joliet, Mont. 59041

Continuation-in-part of Ser. No. 64,482, Aug. 7, 1979, Pat. No. 4,145,021. This application Mar. 16, 1981, Ser. No. 244,244
Int. Cl.³ F28F *9/00*; F24J *3/02*
U.S. Cl. 165—67 **10 Claims**



1. Solar furnace supporting apparatus including a frame portion, a furnace holding portion and an actuating portion, said frame portion including a base section and an upstanding section; said furnace holding portion being pivotally carried by said frame portion, said furnace holding portion including spaced longitudinal members, cross members connecting said longitudinal members adjacent the ends thereof, supporting shaft means disposed substantially perpendicular to said longitudinal members adjacent the centers thereof, said supporting shaft means being engageable with said frame portion adjacent the top of said upstanding section thereof, said actuating portion including cooperating flexible connecting means operatively connected to at least one of said longitudinal members at points along the length thereof substantially equidistant from said supporting shaft means, each of said cooperating flexible connecting means having one end attached to said longitudinal member and extending downwardly in a converging relationship to at least one pair of adjoining parallel pulleys mounted

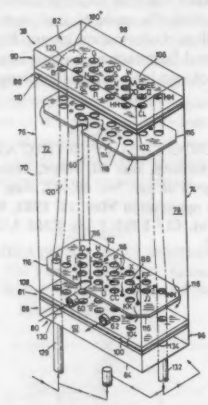
on a freely rotatable first shaft disposed directly below and spaced from said supporting shaft means and aligned substantially parallel thereto, each of said flexible connecting means passing around at least a portion of the periphery of one of said adjoining pulleys, said flexible connecting means passing around its respective pulley in a direction opposite to that the other flexible connecting means passes around its pulley, each of said flexible connecting means extending from said pulleys to one of adjoining parallel drum means affixed to a drum shaft disposed below and substantially parallel to said first shaft, said drum shaft being operatively connected to drive means; whereby actuating said drive means rotates said drum shaft causing one of said flexible connecting means to wind onto one drum while simultaneously delivering said flexible connecting means from the other of said drums, with the lengthening and shortening of the effective lengths of said flexible connecting means causing one end of said furnace holding portion to be lowered while the opposite end of said holding portion is raised to an elevated position.

4,363,355

HEAT EXCHANGER

Martin D. Prucyk, Woods Rd, P.O. Box 58, Nobel, Ontario, Canada

Filed May 9, 1980, Ser. No. 148,366
Int. Cl.³ F28F *9/16*
U.S. Cl. 165—81 **30 Claims**



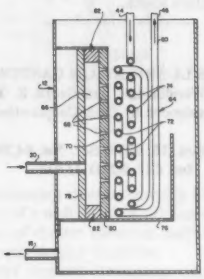
1. A heat exchanger comprising a housing defining a cavity therein, the housing having an inlet and outlet for feeding fluid into, and removing fluid from, the cavity of the housing, a pair of fixed spaced head plates fixed to the housing at either end of the cavity to preclude passage of fluid past the plates between the housing and plates, a pair of second head plates, one for each fixed head plate and secured to the side of the fixed head plate remote the other fixed spaced head plate, at least one of which second plates being removably secured to the fixed head plates, a gasket positioned between the fixed head plates and second plates, the housing further comprising covers for covering the head plates and providing a space between the head plates and cover, a pair of spacer plates secured to the housing between the fixed head plates, each spacer plate positioned adjacent each fixed head plate, the spacer plates permitting fluid within the cavity to flow therethrough, each of the fixed and secured removable head plates having a plurality of aligned apertures therethrough, the apertures being arranged in staggered rows of apertures through the plates, each spacer plate adjacent each set of head plates having staggered rows. of apertures oriented with respect to the staggered rows of apertures in the head plates and the staggered row of apertures through the other spacer plates to secure lengths of tubing extending between opposed head plates, through apertures in the spacer plates, lengths of heat conducting metal tubing secured to open into the staggered apertures in the opposed head plates and extending through the apertures in the spacer plates to provide staggered rows of tubing, the tubing being bowed in their length between the spacer plates to extend into spaces created in the cavity arising from the staggering of the rows of tubing, so as not to interfere with one another during the tubings' expansion, 180° heat conducting metal U-bends secured in the spaces between the removably secured head plates and cover for connecting the apertures through the removable head plates to connect the lengths of tubing to create a continuous flow path for fluid passing therethrough, from the tubing inlet to the tubing outlet leading into and out of the heat exchanger and an inlet and outlet into and from the tubing passing through the exchanger.

4,363,356

HYDRAULIC FLUID COOLING SYSTEM

P. G. Johansing, Jr., 14069 Bayside Dr., Norwalk, Calif. 90650

Division of Ser. No. 3,873, Jan. 16, 1979, Pat. No. 4,220,015, which is a continuation of Ser. No. 824,418, Aug. 15, 1977, abandoned. This application Aug. 28, 1980, Ser. No. 182,009
Int. Cl.³ B22D *19/00*
U.S. Cl. 165—110 **5 Claims**



1. A heat exchange system comprising the combination of:
a reservoir capable of containing a first fluid and including means for discharging the first fluid therefrom; and
a distributor disposed within the reservoir, the distributor having a hollow interior coupled to receive a supply of the first fluid and having a plurality of orifices in a generally planar wall thereof for directing fluid received therein out of the distributor in a plurality of streams in a substantially completely liquid form, a coil of hollow tubing having opposite first and second ends and disposed within the reservoir adjacent the distributor and in the path of the plurality of streams, the hollow tubing having a central axis, each of the orifices having a central axis, the central axes of some of the orifices substantially intersecting the central axis of the hollow tubing, portions of the hollow tubing adjacent at least some of the orifices being spaced apart from the distributor by a distance not substantially greater than the outer diameter of the hollow tubing, the coil being adapted to receive a second fluid therein, whereby heat exchange occurs between the first and second fluids.

4,363,357

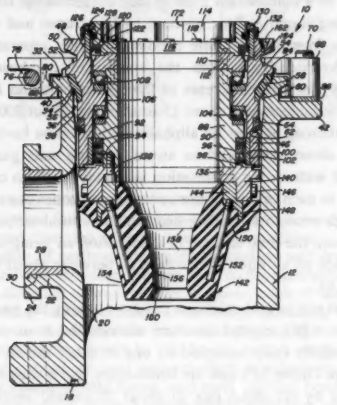
ROTARY DRILLING HEAD

Joseph M. Hunter, 25 Mobile Manor, Getty Ave., Indiana, Pa. 15701

Filed Oct. 9, 1980, Ser. No. 195,633
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—84 **14 Claims**

1. A rotary drilling head comprising a tubular base adapted

to be connected to a well casing, or the like, and including a lateral discharge outlet, said base including a generally vertical passage open at the upper end, a housing inserted into the upper end of said base in sealed relation thereto, means removably securing said housing in said base, a spindle mounted in said housing, bearing means rotatably supporting the spindle in said housing, sealing means interposed between the spindle and housing, means associated with the spindle and housing to supply a continuous pressure lubricating material to the interface between the spindle and housing and to the bearing means and sealing means therebetween, and means connected with the upper end portion of the spindle and adapted to be drivingly engaged by a Kelly bar extending therethrough for rotatably driving said spindle, said housing being generally cylindrical in configuration and provided with a generally centrally located inwardly extending annular flange, said bearing means including a pair of ball-type thrust bearing assemblies engaged with the upper and lower surfaces of the flange on the housing respectively, said spindle including a generally cylindrical exterior with an outwardly extending flange adjacent the lower end thereof engaged with the lower thrust bearing assembly, and a bearing retaining ring releasably mounted on the spindle engaging the upper thrust bearing assembly thereby enabling assembly of the housing, spindle and bearing assemblies.



4,363,358

SUBSURFACE TUBING HANGER AND STINGER ASSEMBLY

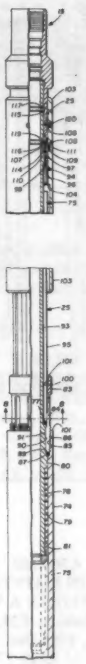
Gary D. Ellis, Richardson, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 117,585, Feb. 1, 1980, Pat. No. 4,305,465. This application May 18, 1981, Ser. No. 264,993

Int. Cl.³ E21B *33/128, 33/129*

U.S. Cl. 166—212 **17 Claims**

1. In combination, a hanger for a tubing string including a tubular body having opposite ends, a head with an inverted, generally frusto-conical section connected to one end of said body, a series of slip segments slidably mounted on said one end and engaging said frusto-conical section for generally radial movement relative to said body when sliding upon said frusto-conical section, means for sliding said segments on said section between retracted and set positions in response to hydraulic pressure, a tubular expansion receptacle connected to said head, a stinger having a hollow body telescoped with said receptacle, means slidably connecting said stinger with said receptacle for selective adjustment of the overall exterior length of said receptacle and said stinger together, means carried by one of said stinger and receptacle for sealing against pressure fluid loss therebetween, a releasable catch in said slidable connecting means movable between a lock position for holding the stinger against axial separation from said receptacle and an unlocked position releasing said stinger for axial separation from said receptacle, and a latch carried by said stinger body for holding said releasable catch in its unlocked position so said stinger may be separated axially from said receptacle by a straight pull.



4,363,359

LOCKING ASSEMBLY FOR WELL DEVICES

Donald F. Taylor, and William G. Boyle, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 20, 1980, Ser. No. 199,034

Int. Cl.³ E21B *23/02*

U.S. Cl. 166—214 **13 Claims**

1. A locking assembly for locking equipment having a rotating element within a well bore including

a motor housing having the rotating element extending therethrough,

a tubular support having its upper end connected with said housing,

an outer tubular body encircling a portion of said support,

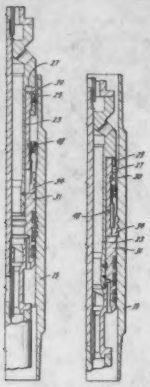
a plurality of locking keys mounted in said body and movable radially into a locking position within a well fluid conductor extending through said well bore,

an expander member interposable between the tubular support and the locking keys and movable relative to said keys from a first position in which the keys are unlocked to a second position where the keys are locked,

means connecting said expander member to the motor housing having the rotating element of said equipment extending therethrough whereby the torque forces developed by said rotating element are transmitted to the expander member and apply a rotative force thereto, and

coacting means between said expander member and said

locking keys for converting the rotative force applied to the expander member into a radial force acting upon the



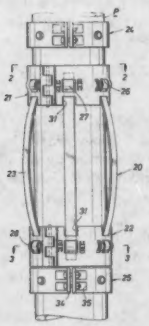
locking keys to urge said keys into tighter locking position.

4,363,360

APPARATUS FOR USE IN MAINTAINING A WELL PIPE CENTERED WITHIN A WELL BORE

Vernon T. Richey, 1111 Blalock, #29, Houston, Tex. 77055

Filed Jan. 15, 1981, Ser. No. 225,301
Int. Cl.³ E21B *17/10*
U.S. Cl. 166—241 **13 Claims**



1. A centralizer for maintaining a well pipe centered within a well bore, comprising upper and lower sleeves adapted to be disposed about the pipe in axially spaced relation, a plurality of springs having bowed portions intermediate their opposite ends, each sleeve having windows thereabout, the opposite ends of the springs having portions which protrude outwardly into the windows, arcuate rods also being received within the sleeve and fitting within the protruding portions of the spring, and means on the sleeves for limiting endwise as well as radial movement of the rods away from the protruding portions of said springs within said windows, whereby the ends of the springs are connected to the sleeves with their bowed portions arranged to yieldably engage the well bore at circumferentially spaced locations about the well bore.

4,363,361

SUBSTOICHIOMETRIC COMBUSTION OF LOW HEATING VALUE GASES

Ajay M. Madgavkar, Irvine, Calif., and Roger F. Vogel, Jefferson Township, Butler County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 19, 1981, Ser. No. 245,529
Int. Cl.³ B01D *53/34*; E21B *43/243, 43/34*
U.S. Cl. 166—256 **8 Claims**

1. The in situ combustion process for recovering hydrocarbons from subterranean formations which comprises injecting a stream of combustion air into at least one injection well leading to a combustion zone in said subterranean formation, producing liquid and/or gaseous hydrocarbons and combustion gas from at least one production well, separating any liquid hydrocarbons from the stream of combustion gas whereby a separated stream of flue gas is obtained having a heating value between about 15 Btu/scf and about 200 Btu/scf and containing at least on aliphatic hydrocarbon having from one to about seven carbon atoms, passing said gas stream admixed with air for combustion in contact with an oxidation catalyst in each of one or more combustion zones at a temperature high enough to initiate and maintain combustion of said gas stream, the total amount of combustion air being sufficient to provide an air equivalence ratio of between about 0.20 and about 0.95,

at least one of said oxidation catalysts having the perovskite-type ABO_3 crystal structure wherein the A sites are substantially fully occupied by one or more metals selected from Group IIA and the lanthanides, the B sites are occupied by (a) about one to about 20 atomic percent of a platinum group metal and (b) about 80 to about 99 atomic percent of one or more non-platinum group metals having an atomic radius between about 0.4 and about 1.4 Angstroms, and the total valence charge of the A and B site metals is equal to the total valence charge of the oxygen present.

3. A process for the recovery of energy from a gas stream having an average heating value in the range of about 15 to about 200 Btu/scf and having a combustible component comprising up to about 100 mol percent methane, from about 0 to about 75 mol percent carbon monoxide, from about 0 to about 50 mol percent hydrogen and from about 0 to about 50 mol percent aliphatic hydrocarbons having from two to about seven carbon atoms, which comprises the steps

(a) passing said gas stream admixed with air for combustion in contact with an oxidation catalyst in each of one or more combustion zones, at an overall average air equivalence ratio of between about 0.2 and about 0.95 and at a temperature high enough to initiate and maintain combustion of said gas stream,

at least one of said oxidation catalysts having the perovskite-type ABO_3 crystal structure wherein the A sites are substantially fully occupied by one or more metals selected from Group IIA and the lanthanides, the B sites are occupied by (a) about one to about 20 atomic percent of a platinum group metal and (b) about 80 to about 99 atomic percent of one or more non-platinum group metals having an atomic radius between about 0.4 and about 1.4 Angstroms, and the total valence charge of the A and B site metals is equal to the total valence charge of the oxygen present,

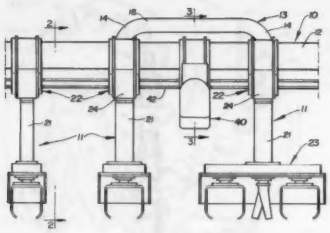
(b) utilizing the heat energy produced in said gas stream by said combustion and

(c) discharging the incompletely combusted gas stream into the atmosphere.

4,363,362
MULTIPLE MACHINE FOR ROW-CROPPING WITH VERTICALLY OPERATING AXES

Paolo Barato, Via Madonna della Salute, 136, Padova, Italy

Filed Mar. 7, 1980, Ser. No. 128,192
Claims priority, application Italy, Mar. 7, 1979, 41526 A/79
Int. Cl.[3] A01B *33/06, 39/08*
U.S. Cl. 172—59 11 Claims



1. An earth tilling machine comprising

an elongated frame extending in a direction transverse to the normal direction of movement of the machine,

a plurality of earthworking units carried on said frame and selectively movable thereon in a direction transverse to the direction of travel of the machine, each of said earthworking units including a vertically extending support strut mounted on said frame and projecting a distance laterally with respect to said frame, and an earthworking head carried on said support strut in relatively remote relationship to said frame, said earthworking head including a plurality of earth tilling rotors with each rotor supported for revolution about a respective vertically extending axis with all rotor axes of a respective head being mutually parallel, said plurality of rotors of each earthworking head disposed in a generally longitudinally extending alignment whereby the rotors of each head have a cumulative effective length greater than the effective working diameter of a single rotor, each rotor of each earth-working head provided with a plurality of angularly spaced apart, vertically extending tilling elements positioned radially outward with respect to the rotor's axis of revolution with the rotors relatively oriented with respect to each other such that the circle of revolution of the tilling elements of a rotor overlaps the circle of revolution of a next adjacent rotor's tilling elements, said earthworking head being mounted on said strut for revolution about a vertical axis disposed parallel to the axis of said rotors whereby said rotors may be revolved in a horizontal plane to a predetermined position relative to said frame, and

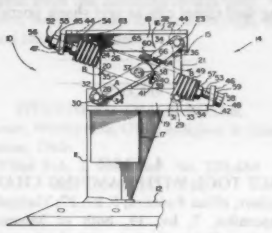
power transmission means operatively coupled with said rotors for effecting revolution thereof.

4,363,363
TRIP MECHANISM

John D. Dyck, 1125 N. Hill Dr., Swift Current, Canada

Filed Nov. 20, 1980, Ser. No. 209,215
Int. Cl.[3] A01B *61/04*
U.S. Cl. 172—264 9 Claims

1. A trip mechanism adapted to allow deflection of a ground working tool, said mechanism comprising a shank adapted to be connected to said ground working tool, a support frame adapted to support said shank and ground working tool, a parallel-type deflection linkage comprising upper, lower, forward and rearward arms, a detent linkage connected to said deflection linkage to hold said deflection linkage in an undeflected position and adapted to allow movement of said deflection linkage when a predetermined load on said ground working tool is exceeded, said detent linkage comprising first and second links each adapted for relative rotational movement about an axis said links being pivotally connected together by adjacent ends thereof, and means for adjusting the position of said axis towards and away from a dead center position and only on one side thereof, spring means to return said deflection

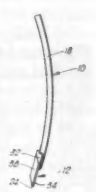


linkage to said undeflected position after said predetermined load is no longer exceeded, and further spring means to return said detent linkage to its position before movement of said deflection linkage.

4,363,364
PLOW CHISEL WITH POINTED SHANK HAVING POINTED CHISEL CAP SECURED THERETO BY WELD

Halsey J. Wetmore, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.

Filed May 29, 1981, Ser. No. 269,406
Int. Cl.[3] A01B *15/02*
U.S. Cl. 172—732 3 Claims



1. A plow chisel comprising:

an elongated arcuate shank portion having opposed parallel side edges and having a point at one end thereof formed by the convergence of said side edges;

a pointed chisel cap including a relieved base portion defining a recess complementary in configuration to, and receiving, the point of said shank portion, said chisel cap further including:

a pointed tip on the opposite end thereof from said base portion;

an upper surface;

a lower surface which extends substantially parallel to the upper surface and having a relief therein forming the recess in the base portion, said relief having a configuration complementary to the configuration of the point of said shank portion and having a depth, as measured from said lower surface toward the upper surface, which is less than the thickness of said shank portion whereby said shank portion projects to a location below said lower surface;

a pair of opposed, substantially parallel rear side surfaces disposed on opposite sides of the recess and extending between the upper surface and the lower surface;

a pair of convergent forward side surfaces each extending normal to the lower surface and projecting upwardly therefrom and extending from the rear side surfaces to the tip; and

a pair of convergent beveled surfaces projecting upwardly from the forward side surfaces to the upper surface and inclined toward each other and meeting in a line of con-

vergence at an upper forward edge inclined at an acute angle to said lower surface; and

weld metal in the angular corner space defined between said shank portion and the lower surface of said chisel cap for securing said chisel cap to said shank portion.

4,363,365

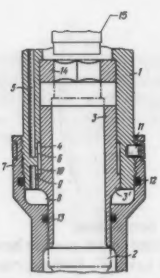
IMPACT TOOL WITH DAMPING CHAMBERS

Igor V. Nikolaev, ulitsa Fadeeva, 5, kv. 37; Vladimir A. Evpolov, ulitsa Papernika, 7, kv. 19, both of Moscow; Lidia M. Dronova, ulitsa Kalarash, 5, kv. 68, Ljubertsy Moskovskoi oblasti; Anatoly I. Lednikov, Korovinskoe shosse, 9, korpus 2, kv. 51; Mikhail A. Moskvin, Petrovsko-Razumovskaya alleya, 16, kv. 101, both of Moscow; Oleg Y. Sutyagin, ulitsa Dekabristov, 5, kv. 51, Sverdlovsk; Oleg A. Yankovsky, ulitsa Kuibysheva, 102, kv. 17, Sverdlovsk; Viktor E. Kilin, Posadskaya ulitsa, 44, korpus 2, kv. 40, Sverdlovsk; Evgeny S. Kolmyk, ulitsa 6 Okolotok, 1, Sverdlovsk; Konstantin K. Tupitsyn, Krasny prospekt, 51/3, kv. 25, and Alexei M. Makarov, Vostochny poselok, 18a, kv. 16, both of Novosibirsk, all of U.S.S.R.

Filed Mar. 3, 1980, Ser. No. 126,562

Int. Cl.³ B25D *17/24*

U.S. Cl. 173—139 **6 Claims**



1. A pneumatic percussive tool, comprising:

a barrel;

a hammer piston reciprocatingly mounted in said barrel;

a sleeve in said barrel;

said sleeve having an external annular projection defining with said barrel an auxiliary damping chamber and a second damping chamber;

said sleeve being axially movable between two extreme positions;

a working tool having a collar engaging the end of said sleeve on the side of said auxiliary damping chamber;

a supply passage in said barrel permanently connecting said second damping chamber with a compressed fluid source;

a first part in said barrel for connecting said supply passage with said auxiliary damping chamber;

a second port in said barrel communicating with said second damping chamber;

said compressed fluid acting with greater force on said sleeve on the side of said auxiliary damping chamber than on the side of said second damping chamber;

both said ports communicating with said auxiliary damping chamber when said sleeve 18 is in the first of said extreme positions;

said first port being closed when said sleeve is in the second of said extreme positions.

4,363,366

SCREENED HOLLOW STEM AUGER FOR USE IN WELL DRILLING AND TESTING PROCESS

Robert D. Hilty, Williamston, Mich., assignor to Keck Consulting Services, Inc., East Lansing, Mich.

Filed Jun. 13, 1980, Ser. No. 159,042

Int. Cl.³ E21B *17/22, 43/08*

U.S. Cl. 175—314 **5 Claims**

1. A vertically oriented screened hollow stem auger for use in the simultaneous drilling and testing of wells so as to detect and monitor the existence of hazardous and toxic waste at subsurface levels comprising:

an elongate cylindrical hollow stem body member defining a longitudinal axial bore therethrough, said body member having a central screened portion in open communication with the interior thereof so as to permit the selective intake of fluids into said bore, said body member having an upper end portion adapted for selective lockable end-to-end engagement with a vertical solid wall hollow stem auger element positioned thereabove, said body member having a lower end portion adapted for selective lockable engagement with a drilling component; and

a continuous auger flight element provided on the external surface of the hollow stem body member so as to extend longitudinally therealong across said central screened portion, said central screened portion being the sole support of the portion of said auger flight element extending thereacross.

4,363,367

LARGE DIAMETER DRILL BIT

Robert L. Dixon, Brea, and Malcolm D. Maxsted, Harbor City, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 26, 1981, Ser. No. 314,803

Int. Cl.³ E21B *10/10, 10/18*

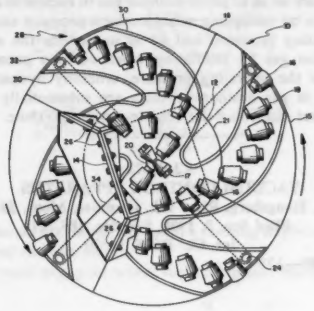
U.S. Cl. 175—340 **14 Claims**

1. A large diameter rotary drill bit comprising:

a main bit body adapted for connection with a dual-string drill column, said dual-string drill column consisting of a first outer drill pipe and a second concentric inner drill pipe spaced from said outer drill pipe, said body forming a central opening in communication with said second inner drill pipe of said dual-string drill column,

means to confine a supply of drilling fluid directed through said drill column outwardly to a peripheral edge of said bit body, said drilling fluid subsequently being directed along at least one arcuate flow path from said peripheral edge to said center opening formed in said bit body, a first wall

member mounted to a lower surface of said bit body, said first wall member being mounted substantially 90° to said lower surface of said bit body, forming a first side of said arcuate path, and a second wall member substantially parallel with said first wall member mounted to said bit body forming a second enclosing side of said arcuate path, and



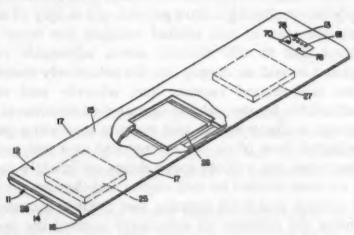
a plurality of cutter assemblies rotatably mounted to said lower surface of said bit body within said first and second wall members, said plurality of said cutter assemblies being strategically positioned along said arcuate flow path to form a cutting plane for contacting and disintegrating an earth formation, said drilling fluid serves to direct detritus material along said at least one arcuate path and to clean and cool said plurality of cutter assemblies during operation of said bit.

4,363,368

MEDICAL PATIENT WEIGHING SCALE

Christopher M. Paddon, Denver, Colo., and Donald C. Wetzel, Berea, Ohio, assignors to Health Care Innovations, Inc., Medina, Ohio

Filed Mar. 13, 1981, Ser. No. 243,634
Int. Cl.³ G01G *19/44*
U.S. Cl. 177—144 **14 Claims**



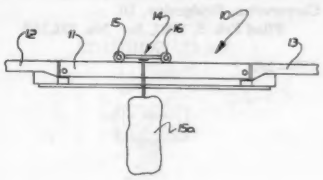
1. A medical patient weighing scale comprising:
an elongated, flat, rigid pan capable of supporting the weight of a patient, the pan being at least five feet long and adapted to be supported on a bed mattress;
a plurality of thin, electronic load cells mounted in the pan, each load cell being spaced at least one foot apart along the length of the pan;
a rigid, elongated flat cover freely supported on the load cells, the cover being at least the same size as the pan and being of sufficient size to support a patient in a supine position, the cover attached to the pan by extendable attachment means;
electronic summing means mounted between the cover and the pan and connected to each of the load cells, the summing means receiving signals from each of the load cells and producing a signal corresponding to the sum of the weight sensed by all of the load cells;
digital display means on the cover and connected to the summing means for displaying the weight corresponding to the signal from the summing means; and
internal power supply means for the load cells, the summing means, and the display means.

4,363,369

OVERHEAD TRACK SCALE

William C. Susor, Westerville, Ohio, assignor to Masstron Scale Inc., Columbus, Ohio

Filed Feb. 2, 1981, Ser. No. 230,434
Int. Cl.³ G01G *19/06*
U.S. Cl. 177—163 **12 Claims**



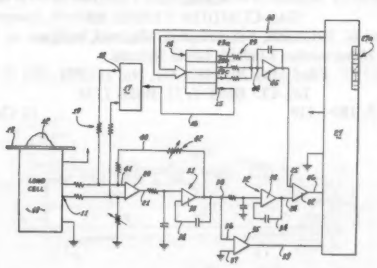
1. A track scale for weighing a load on a track, said scale comprising a live rail for supporting said load to be weighed, a pair of load cells spaced longitudinally of said live rail and supporting said live rail, said load cells having sensing means for sensing shear stresses and providing a signal indicative of the load supported by said load cells, each of said load cells having a projecting portion extending transverse to said live rail and supporting said live rail, and means interposed between the projecting portion of each load cell and said live rail for ensuring that the load is applied to said load cell at the same axial position along the length of said load cell and normal to the neutral axis of the load cell.

4,363,370

ACCURATE WEIGHT MEASUREMENT USING DIGITAL TO ANALOG CONVERTER MEANS AND ANALOG TO DIGITAL CONVERTER MEANS

Warren Sarkison, Huntington Beach, Calif., assignor to Load Cells Inc., South El Monte, Calif.

Filed Apr. 7, 1981, Ser. No. 247,525
Int. Cl.³ G01G *3/14*
U.S. Cl. 177—210 R **9 Claims**



1. In an electronic scale apparatus, the combination comprising
(a) a force transducer having a first analog output that is ultimately converted to a digital output,
(b) the digital output being fed to a digital to analog converter means having a second output,
(c) a first differential amplifier operatively connected with

said tranducer and converter to receive, as inputs, signals corresponding to said first and second outputs, and to produce a third output corresponding to the amplified difference between said first and second outputs,

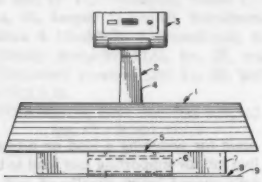
(d) and a second differential amplifier operatively connected with the output of said first differential amplifier and with said output of the converter means to receive, as inputs, signals corresponding to said third output and to a fourth output of the converter, and to a produce a fifth output corresponding to the difference between said third and fourth outputs, said fifth output driven in a direction to balance the third and fourth outputs.

4,363,371

PEDIATRIC TRAY AND WEIGHING SCALE

William Y. Hutchinson, Chicago, Ill., assignor to Continental Scale Corporation, Bridgeview, Ill.

Filed Feb. 5, 1981, Ser. No. 231,743
Int. Cl.³ G01G *21/22*
U.S. Cl. 177—262 **12 Claims**



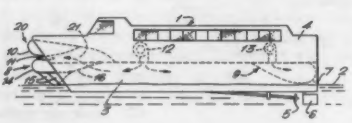
1. In a weighing scale having a weighing platform, support for said platform adapted to rest on a flat, horizontal surface, weighing mechanism responsive to the weight of an object placed on said platform, means for indicating weight in response to actuation of said weighing mechanism, and a tray to receive an object to be weighed, the improvement comprising an elongated tray to receive an object to be weighed, said tray having a bottom portion which is substantially flat and is mounted on said weighing platform with elongated bottom and sides extending outwardly from said weighing platform in opposite directions, said tray having a skirt on the bottom thereof extending at least partially around a major portion of the weighing platform and terminating a fraction of an inch from said flat horizontal surface on which said scale rests, whereby tipping and spilling of the object is avoided when an elongated object is placed in said tray to be weighed.

4,363,372

GAS-CUSHION VEHICLES

Edward G. Tattersall, Southampton, England, assignor to Vosper Hovermarine Limited, Great Britain

Filed May 20, 1980, Ser. No. 151,551
Int. Cl.³ B60V *1/11*; B63B *1/38*
U.S. Cl. 180—118 **12 Claims**



1. A gas-cushion vehicle provided with a means for forming a vehicle-supporting cushion of pressurized gas between the vehicle body and the surface over which the vehicle travels and provided with a means for containing the vehicle-supporting cushion about its periphery, the vehicle comprising:

a gas-flow outlet connection through a portion of the vehicle between a space occupied by cushion gas and the atmosphere, the gas-flow outlet connection having a sealing surface; and,

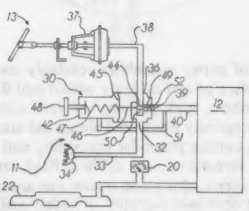
a flexible, hollow wall member disposed within the outlet connection and inflatable to an operating pressure, the sealing surface of the gas-flow outlet connection and the inflatable member together forming a valve which is automatically operable in response to variations in cushion pressure so as to allow cushion gas to escape to the atmosphere by collapsing when cushion pressure exceeds the operating pressure, and so as to impede the escape of cushion gas by reinflating when cushion pressure falls below the operating pressure, whereby dynamic variations in gas cushion pressure are substantially reduced without disturbing the vehicle-terrain interface.

4,363,373

VACUUM CONTROL APPARATUS

Ronald H. Haugeberg, River Rd., Glendive, Mont. 59330

Filed Sep. 8, 1980, Ser. No. 185,227
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—175 **3 Claims**



1. Control apparatus for a vehicle having a speed control unit, said speed control unit being responsive to the vacuum created by the engine of said vehicle and including a first vacuum line from the engine of said vehicle to said speed control unit and a second vacuum line from said speed control unit to a throttle servo of said engine; said control apparatus including vacuum measuring gauge means disposed in said first vacuum line from said vehicle engine to said speed control unit, flow restricting means disposed in said first vacuum line, an air supply line including a filter providing a supply of air at atmospheric pressure to said second vacuum line from said speed control unit to said throttle servo, adjustable valve means disposed in said air supply line for selectively metering said air into said second vacuum line; whereby said valve means is adjustable by the vehicle operator in relation to the engine vacuum as displayed on said vacuum measuring gauge so that a selected flow of air can be metered into said second vacuum line when the vehicle speed drops sufficiently to decrease the vacuum created by said engine and thereby prevent said speed control unit from opening said throttle excessively while enabling the operator to selectively control the operation of the engine.

4,363,374

TRACTOR

Howard J. Richter, and Graham J. Richter, both of 2 Church St., Boonah, Australia (4310)

Filed Oct. 10, 1980, Ser. No. 196,017
Claims priority, application Australia, Apr. 6, 1979, PD8339
Int. Cl.³ B62D *49/00*
U.S. Cl. 180—209 **9 Claims**

1. A tractor including:

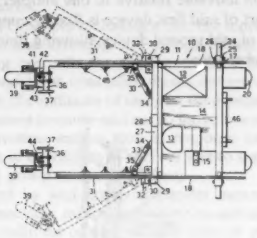
(a) a frame;

(b) an engine mounted on said frame;

(c) at least one drive wheel supporting said frame;

(d) transmission means operatively connecting said engine and said drive wheel;

(e) at least one boom pivotally connected to said frame and extending in a direction away from said frame;
(f) means for pivotally moving said boom toward or away from the longitudinal axis of said frame;



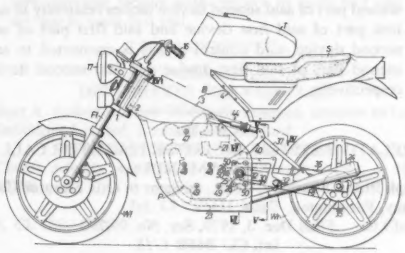
(g) means on said boom to permit a farming implement to be secured thereto; and
(h) a ground engaging wheel supporting said boom.

4,363,375

MOTORCYCLE

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1980, Ser. No. 152,101
Claims priority, application Japan, May 26, 1979, 54/65235
Int. Cl.[3] B62K *11/04*
U.S. Cl. 180—227 9 Claims



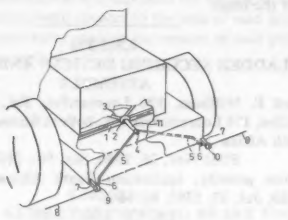
1. A two-wheeled motorcycle comprising:
a vehicle frame in the form of shell structure of thin sheet material having a pair of opposed side sections and a head pipe at the front end thereof to support a front wheel steering shaft;
a rear wheel driving power unit accommodated in and interconnected with said opposite side sections of said shell structure for increased rigidity of latter;
guide rail means disposed on the inside surfaces of said opposed side sections of said shell structure and extending longitudinally in a horizontal direction;
a pair of slide members provided on each side of said power unit and adapted to be slidably engaged with said guide rail members for setting said power unit at a predetermined position in said shell structure; and
power unit supporting members provided on said opposed side sections of said shell structure so as to be firmly fixed to opposite sides of said power unit, said supporting members including mounting bosses integrally formed in said shell structure in axial alignment with an output shaft of said power unit, said bosses each having a tool insertion window for tool insertion therethrough.

4,363,376

DEVICE ON A MOTOR-DRIVEN VEHICLE TO DETECT AN OBSTACLE IN THE WAY OF THE VEHICLE DURING BACKING

Ake L. Sjöberg; Per E. Sjöberg, both of Torsdagsgränd 15, S-302 53 Halmstad, and Frans B. Sjögren, PL 109 11 Vilshärad, S-305 90 Halmstad, all of Sweden

PCT No. PCT/SE80/00142, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 15, 1981, PCT Pub. No. WO80/02539, PCT Pub. Date Nov. 27, 1980
PCT Filed May 14, 1980, Ser. No. 229,573
Claims priority, application Sweden, May 18, 1979, 7904367
Int. Cl.[3] B60T *7/12*
U.S. Cl. 180—275 2 Claims



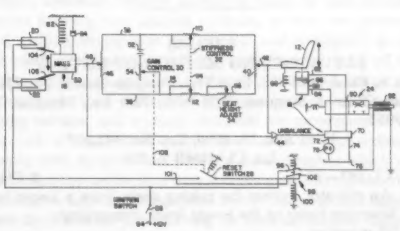
1. On a motor-driven vehicle having air brakes and quick-emptying brake valves releasing air on a braking operation a device to detect an obstacle in the way of the vehicle during backing, the device comprising in combination holders projecting backwards from each of the outer edges of the rear portion of the vehicle, one of which includes a transmitter for transmitting a pulsating light beam and one of which includes a receiver of such light beam, and means for mounting said transmitter and receiver on at least one of said holders for conveying the pulsating light beam between the holders for actuating said vehicle brakes when backing of the vehicle takes place and the light beam between said holders is interrupted by an obstacle external to said vehicle, means directed toward both holders comprising an air line fed with outflowing air from at least one of the quick-emptying valves of the vehicle on a braking operation for delivering a blast of air towards the holders to keep them free of dirt and the like which prevents transmission of the light beam between the holders.

4,363,377

ACTIVE SEAT SUSPENSION CONTROL SYSTEM

Harlan W. Van Gerpen, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 22, 1980, Ser. No. 189,637
Int. Cl.[3] B60G *17/00*
U.S. Cl. 180—282 21 Claims



1. An active seat suspension control system comprising the combination of:
a vibrometer having a vertically movable mass therein and

operative to provide a signal representing the vertical position of the mass;

a seat;

means for providing a signal representing the vertical position of the seat;

an electrical bridge circuit coupled to receive the signal representing the vertical position of the mass and the signal representing the vertical position of the seat and operative to provide a signal representing the difference between the signals;

means for adjusting the height of the seat in accordance with the signal representing the difference; and

means for disabling the means for adjusting the height of the seat when the mass of the vibrometer reaches either of an opposite pair of predetermined limits of vertical position of the mass.

4,363,378

LADDER SECURING DEVICES AND LADDER ASSEMBLY

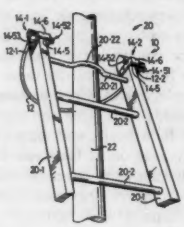
Richard E. Williams, 106 Lourensriver Rd., and Kenneth J. Budden, 174 Lourensriver Rd., both of Strand, Cape Province, South Africa

Filed Nov. 26, 1980, Ser. No. 210,626

Claims priority, application South Africa, Dec. 3, 1979, 79/6560; Jul. 31, 1980, 80/4666

Int. Cl.³ E06C *7/48*

U.S. Cl. 182—93 **8 Claims**



1. A ladder securing device comprising a substantially rigid fastening element, a first connector for attachment to a ladder, said first connector comprising a first element for connection to the ladder, a second element connected to said first element and selectively rotatable with respect to the first element about a first axis, and a third element for rotatably securing said fastening element to said second element, capable of allowing rotation of said fastening element about a second axis perpendicular to said first axis, a second connector for attachment to a ladder, and means for releasably attaching said fastening element to said second connector.

4,363,379

Patent Not Issued For This Number

4,363,380

ELEVATOR AND METHOD OF LIFTING

Glen A. Rued, 5005 NE. First Ter., Pompano Beach, Fla. 33064, and Elmer J. Simpson, 1455 NW. 70th La., Margate, Fla. 33063

Filed Apr. 18, 1980, Ser. No. 141,377

Int. Cl.³ B66B *11/04*

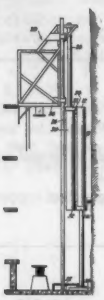
U.S. Cl. 187—17 **9 Claims**

1. An elevator system for raising items from a lower level and lowering items to the lower level, comprising:

a lift member;

at least a first hydraulic piston cylinder device and a second hydraulic piston cylinder device, said first device including at least two parts, said at least two parts of said first device including a first part which consists of a first casing and a second part which consists of a first piston relatively movable in relation to one another, said second device including at least two parts, said at least two parts of said second device including a first part which consists of a second casing and a second part which consists of a second piston movable relative to one another;

said first part of said first device is fixedly connected to said first part of said second device allowing fluid communication therebetween;



said first device connected to said lift member;

said second device connected to the lower level;

control means for regulating the travel length of the second part of said first device and said second device respectively, said control means functions to displace the second device simultaneously with the first device when the second part of said second device moves relatively to said first part of said first device and said first part of said second device, said control means is connected to said second part of said first device and said second device respectively.

4,363,381

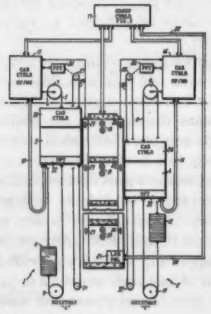
RELATIVE SYSTEM RESPONSE ELEVATOR CALL ASSIGNMENTS

Joseph Bittar, Simsbury, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Dec. 3, 1979, Ser. No. 99,790

Int. Cl.³ B66B *1/18*

U.S. Cl. 187—29 R **11 Claims**



1. An elevator system including a group of elevators for servicing a plurality of floor landings in a building, comprising:

group controller means, including hall call means for registering calls for up and down service at each of said landings, for exchanging signals with each of said elevators, and for controlling the operation of said elevators in response to said hall call means and signals received from said elevators;

each of said elevators including a car, car motion means for providing and arresting the motion of said car, means registering car calls for service required by passengers therein, and a car controller means for providing signals indicative of conditions of said car, for controlling said car motion means to cause said car to move in a selected up or down direction and to stop in response to said signals indicative of conditions of said car and to signals received from said group controller means;

characterized by said group controller means comprising signal processing means responsive to said signals indicative of conditions of each of said cars for providing, for each car, with respect to each hall call registered, a signal representing the summation of relative system response factors, indicative of the relative degree to which the assigning of any hall call to said car is in accordance with a scheme of system response applicable to all of said cars, a first plurality of said relative system response factors registered being unrelated to the floor landing or direction of the hall call and a second plurality of said relative system response factors being indicative of service to be performed by each car in reaching the floor of the registered hall call, said relative system response factors being weighted with respect to one another to represent a reasonable increase in time expected for said group of elevators to answer a specific hall call in contrast with favoring another aspect of said scheme of system response identified with a respective one of said relative system response factors, and for assigning each registered hall call to the car provided with the lowest summation of relative system response factors with respect to such hall call for service to such hall call.

4,363,382

DISC BRAKES FOR VEHICLES

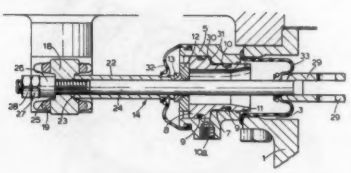
Robert A. Anderson, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 30, 1980, Ser. No. 221,262

Claims priority, application United Kingdom, Jan. 4, 1980, 8000258

Int. Cl.³ F16D *55/18*

U.S. Cl. 188—71.4 **10 Claims**



1. A disc brake comprising a housing incorporating rotatable friction discs, opposed radial surfaces, pressure plates located between said friction discs and balls located in co-operating oppositely inclined recesses in adjacent faces of said pressure plates, and an actuator assembly of which the axis is substantially at right angles to the axis of the brake, said actuator comprising a first component fixed relative to said housing, and a second movable component movable with respect to said component, said actuator assembly hydraulically initiating application of the brake by effecting angular movement of said pressure plates in opposite directions whereby said pressure plates move apart into engagement with said friction discs which are urged into engagement with said radial surfaces in said housing, one of said pressure plates being provided with a lug which engages with a stop abutment to arrest said one pressure plate, whereby continued angular movement of the other of said pressure plates provides a servo action, said actuator assembly incorporating a part-spherical rocking thrust coupling through which said movable component acts, and a pull-rod passing through said actuator assembly with a substantial clearance and with which said coupling co-operates, and a thrust member disposed between said movable component and said spherical rocking coupling, the inner end of said pull-rod being pivotally connected to the junction of a pair of toggle links connected between lugs on said pressure plates and the outer end of said pull-rod being extended for connection through a specifically defined point to a transmission member, and said thrust member being engageable with a thrust transmitting force on said movable component for sliding motion in a transverse direction with respect to the axis of said actuator assembly to accommodate angular movement of said pull-rod when the brake is applied.

4,363,383

BRAKE WITH AXIALLY EXPANDING BRAKE SHOES

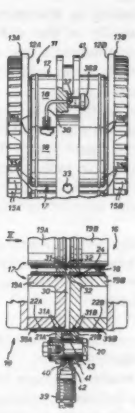
Leonce E. R. Rogier, St Denis, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Nov. 15, 1979, Ser. No. 94,548

Claims priority, application France, Nov. 16, 1978, 78 32329

Int. Cl.³ F16D *55/18*

U.S. Cl. 188—72.5 **16 Claims**

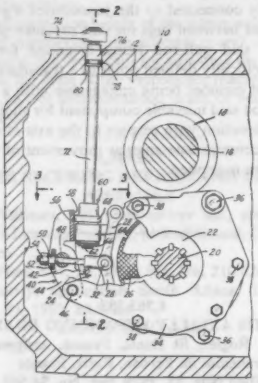


1. A brake with axially expanding brake shoes comprising a rotatable member, a peripheral annular groove in said rotatable member, opposite radially extending faces of said rotatable member forming two braking surfaces, at least one actuating block radially engaged in said groove and connected to support means, said actuating block including for each of said braking surfaces, at least one actuating unit comprising a cylinder having at least one open end opening onto its associated braking surface, and a piston mounted for movement at said open end of each of said cylinders, each of said cylinders defining with its associated piston a fluid chamber which is in communication with a feed nozzle connectable to a pressurized fluid source, said actuating block being joined to said support means by a swivel joint having an internal and an external cage, said actuating block forming a yoke joined to one of said cages of said swivel joint, the other of said cages being joined to said support means and said yoke forming means cooperable with said support means for restricting movement of said actuating block.

4,363,384
BRAKE ASSEMBLY

Leonard H. Richardson, Dearborn Heights; Otto Mueller, Jr., Detroit, and Lee E. Elfes, Bloomfield Hills, all of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 2, 1978, Ser. No. 930,310
Int. Cl.³ F16D 55/08
U.S. Cl. 188—72.7 3 Claims



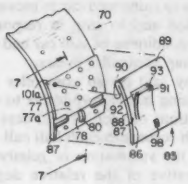
1. In a tractor, the combination comprising:
a differential housing;
a transmission including a transmission housing secured immediately forwardly of the differential housing, said transmission housing having a rear wall, and a drive shaft extending rearwardly from said rear wall and disposed within the differential housing;
brake discs mounted on the drive shaft;
a disc brake construction adapted to engage said disc brakes and hold them from rotation, said disc brake construction also including a shiftable brake applying link;
a mounting structure secured to the rear wall of said transmission housing and supporting said disc brake construction;
a lever having an intermediate portion engaged by said link, one end of said lever being pivotally connected to said mounting structure and the other end being provided with a cam follower surface;
a cam;
means rotatably supporting the cam in engagement with the cam follower surface; and
means operable to rotate said cam and capable of causing said drive shaft to be braked, said means including a rotatable shaft passing through an aperture in the differential housing.

4,363,385
TRANSMISSION BRAKE BAND END CONNECTION

Alfred Schlanger, 265 Wheatley Rd., Old Westbury, N.Y. 11729

Continuation-in-part of Ser. No. 173,228, Jul. 28, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,489
Int. Cl.³ F16D 65/04, 65/06
U.S. Cl. 188—249 11 Claims

1. A transmission brake band comprising:
a brake band formed with a friction lining on one side;
a strut seat disposed on the other side of the band, and at one end of the band, and comprising a first base plate fixed to the one end, said first base plate being formed with a hooked portion extending from the first base plate; said band being formed with a hole adjacent the other end of the band;
a second base plate formed on the other end and being formed with a hole coincident with said band hole, said second base plate being formed with a rear edge disposed away from said hole; and
a replaceable bracket being formed with a bent portion forming a tongue and extending away from the bracket so as to form an opening in the bracket so that a force exerting member engages the tongue, said bracket being formed with mounting means receivable in said coincident hole, said mounting means comprising an elongated tab member depending from said bracket, said elongated tab

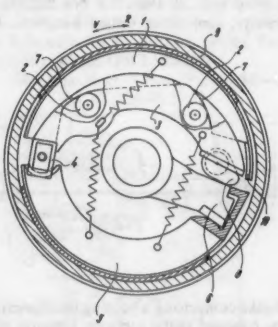


member engaging said coincident hole, said hole being elongated so as to receive said tab, and said replaceable bracket being formed with a curved portion having an edge formed on the end of the bracket opposite from the hole, wherein said curved portion edge engages the rear edge of the second baseplate opposite the hole, whereby the force from said force exerting member is transferred from the tongue and curved portion to the second base plate and in turn to the band.

4,363,386
OVERRUNNING DRUM HAVING AN AMPLIFYING DEVICE

Josef Peitz, Sr., Pater Ewald Strasse 29, 4790 Paderborn, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,970
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914468
Int. Cl.³ F16D 51/60
U.S. Cl. 188—331 7 Claims



1. A wheel brake, particularly an overrunning wheel brake, comprising a brake drum having an axis; a first brake shoe displaceable in forward and rearward directions and arranged to move toward said brake drum in a radial direction to be pressed against said brake drum with a pressure force; a support member which supports said first brake shoe; a second brake shoe connected with and together with said support member and displaceable in said forward and rearward directions and also arranged to be pressed against said brake drum with a pressure force; amplifying means arranged to cooperate with only said first brake shoe and to amplify the pressure force with which said first brake shoe is pressed against said

brake drum, said amplifying means including a first formation provided on said support member and a second formation provided on said first brake shoe and cooperating with said first formation so as to amplify the pressure force during movement of said first brake shoe in said forward direction, said second formation on said first brake shoe being formed by a curved outer surface portion adjacent said drum and a lifting track portion adjacent said support member, said curved outer portion and said lifting track portion forming a wedge-shaped portion on said first brake shoe converging in said forward direction, said first formation including a guiding member on said support member cooperating with said wedge-shaped portion; means for displacing said first brake shoe in said forward direction so that, upon the displacement in said forward direction, said first brake shoe cooperates with said amplifying means and is pressed against said brake drum with the amplified pressure force, said displacing means including a tightening member arranged to act on said support member so as to displace said support member together with said first brake shoe in said radial direction; and urging means provided on said first brake shoe and normally spaced from said second brake shoe, said urging means arranged so that, when said first brake shoe is displaced in said rearward direction, said urging means abuts an end portion of said second brake shoe and urges and displaces said second brake shoe in said rearward direction, said second brake shoe acts upon said support member and thereby on said amplifying means which, in turn, cooperates with said first brake shoe, thereby said first brake shoe is also pressed against said brake drum with the amplified pressure force, so that said first brake shoe is pressed against said brake drum with the amplified pressure force not only during the displacement in said forward direction but also during the displacement in said rearward direction, said first brake shoe having an open end portion facing toward said tightening member, and said urging means being provided on said end portion of said first brake shoe, and arranged to displace said second brake shoe in a circumferential direction.

4,363,387

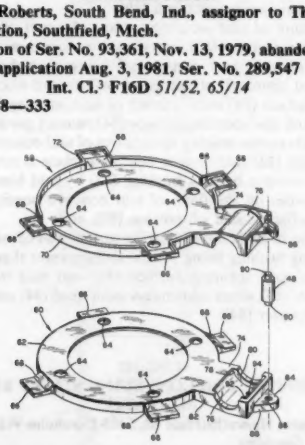
WHEEL CYLINDER AND TORQUE PLATE CONSTRUCTION

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 93,361, Nov. 13, 1979, abandoned. This application Aug. 3, 1981, Ser. No. 289,547

Int. Cl.³ F16D *51/52, 65/14*

U.S. Cl. 188—333 **3 Claims**



1. A wheel cylinder and torque plate combination for a drum brake assembly wherein the wheel cylinder receives a pair of pistons, said combination comprising two stamped torque plate parts, each having a central planar portion to be affixed to the other planar portion and to a wheel axle housing or the like, said torque plate parts also having integrally formed matching shells which form a complete cylindrical shell when said parts are assembled, and a plastic member having a cylindrical bore therethrough mounted in said matching shells, said plastic member being substantially enclosed within and contiguously engaging said complete cylindrical shell to prevent expansion of said plastic member, said plastic member cylindrical bore receiving at least one piston to substantially define the wheel cylinder for the drum brake assembly, and said wheel cylinder being defined solely by said plastic member and said torque plate parts for receiving the pair of pistons.

4,363,388

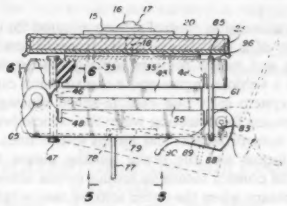
GARMENT BAG UNIT

Wallace London, 641 S. Monroe St., Baltimore, Md. 21223, and Kurt L. Meyer, Ellicott City, Md., assignors to Wallace London, Baltimore, Md.

Filed Jul. 13, 1981, Ser. No. 282,714

Int. Cl.³ A45C *3/00;* **B65D** *85/18;* **A44B** *21/00*

U.S. Cl. 190—41 B **14 Claims**



1. A frame type garment bag unit having means on the outside of the top thereof for suspending the bag while loading therein or unloading therefrom a plurality of garments on hangers therefor, which may alternatively be of the type having a vertical wire shank extending upwardly from the center of the hanger and terminating in a downwardly extending curved hook portion, or a vertical wire shank having a bulbous enlargement at the upper end thereof, comprising,

(a) a jointed clamp disposed in a generally vertical plane and having an upper channel fixed to the garment bag and a lower channel pivotally mounted to said upper channel at the rear ends thereof, with the open edge of each channel facing the other,

(b) a horizontally disposed hinge pin at said rear ends extending beyond the external surfaces of said channels,

(c) a reenforcing sleeve surrounding said hinge pin between the internal surfaces of said channels,

(d) a strip of resilient material seated within each channel and protruding beyond the open edge thereof,

(e) a latching device of high mechanical efficiency at the front end of said jointed clamp for alternately permitting the spreading of said channels or the clamping thereof together, for embracing the hook portions of the garment hangers to maintain them in fixed position,

(f) means extending between said last-mentioned upper channel and said lower channel for limiting the pivotal movement of the latter in the open position of said jointed clamp, to provide an inclined support for the hook portions of the garment hangers in the course of loading and unloading the latter into and from the garment bag, and

(g) the bottom wall of said lower channel having an elongated keyhole-shaped slot for permitting the insertion and withdrawal of hangers having wire shanks with bulbous enlargements, to render the garment bag universally adaptable for enclosing garments on both types of hangers.

4,363,389

VEHICLE TRANSMISSION CONTROL SYSTEM

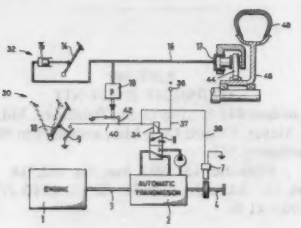
Franz X. Zaunberger, and Artur Kugler, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnräderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,565

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933075

Int. Cl.³ B60K *41/08, 41/28*

U.S. Cl. 192—0.042 10 Claims



1. A transmission control system adapted for controlling the operation of a vehicle automatic transmission having a fluid coupling and means for interrupting the driving connection between a vehicle engine and a transmission output shaft, the control system including vehicle speed sensing means, brake sensing means for detecting when the vehicle brakes have been applied, control means, and means interconnecting the speed sensing means and the brake sensing means to the control means, the control means including means actuating the interrupting means when the speed sensing means indicates that the vehicle speed is at or below a predetermined value and simultaneously the brake sensing means indicates that a minimum predetermined braking force has been applied, the means for actuating the interrupting means including means for restoring the driving connection prior to complete release of braking force whereby reduced engine load will be achieved with smooth vehicle operation during braking and subsequent acceleration.

4,363,390

RATCHET GEAR FOR THE DRIVING HUB OF A BICYCLE

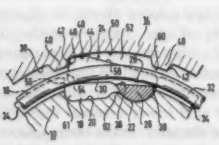
Ewald Eisend, Grafenrheinfeld, and Josef Keller, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,455

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 7931360[U]

Int. Cl.³ F16D *41/12*

U.S. Cl. 192—46 5 Claims



1. A ratchet gear to be used in a bicycle hub and the like comprising:

a pawl carrier (10) rotatable about a first axis (12),

at least one pawl (24) pivotally mounted on said pawl carrier (10) about a second axis (28), a gear carrier (14) also rotatable about said first axis (12), entrainer teeth (40) on said gear carrier (14) for engagement with said pawl (24),

said pawl (24) comprising a bearing base (26) and an engagement head (44), said bearing base (26) comprising a partly cylindrical segment-shaped convex bearing surface extending over an angle of less than 180° about the second axis,

said pawl carrier (10) comprising a recess-like compartment (18) for receiving said pawl (24), said compartment (18) comprising a partly cylindrical segment-shaped concave bearing bushing (22) for receiving said convex bearing surface of said pawl (24),

a sill portion (62) adjacent said bearing bushing (22),

and a floor portion (20) adjacent said sill portion (62) on the side of said sill portion (62) remote from said bearing bushing (22),

said engagement head (44) being provided with an entrainer surface (46) extending transversely of the circumferential direction of said pawl carrier for engagement with respective entrainer flanks (42) of said entrainer teeth (40), and said engagement head (44) being in contact with said gear carrier (14) when said convex bearing surface of said bearing base (26) is received in said bearing bushing (22),

biasing means (32) for biasing said pawl (24) toward engagement with said entrainer teeth (40), said biasing means (32) comprising a spring ring circular about said first axis (12) and having an intermediate portion received within a slot (30) in said pawl (24) and engaging the floor (36) of said slot (30),

said entrainer surface (46) of said engagement head (44) having a securing surface (54) extending inwardly therefrom and movable toward said floor portion (20) of said compartment (18), from the position where said engagement head (44) contacts said gear carrier (14), said floor portion (20) of said compartment (18) having an intercepting face (56) extending transversely of the circumferential direction of said pawl carrier, said securing surface (54) facing said intercepting face (56) in the direction extending transversely of the circumferential direction of said pawl carrier when said entrainer surface (46) of said engagement head (44) engages said entrainer flank (42) of a respective entrainer tooth (40),

the spacing of said securing surface (54) and of said intercepting surface (56) when said engagement head (44) contacts said gear carrier (14) being such that on unintended approach of said pawl (24) toward said intercepting surface (56) until contact of said intercepting surface (56) and said securing surface (54) causing partial removal of said convex bearing surface out of said concave bearing bushing (22) said convex bearing surface is returned into said concave bearing bushing (22) by said biasing means and slides on the flank of said concave bearing bushing (22) adjacent said sill portion (62), and

the radius of said convex bearing surface and of said concave bearing bushing being substantially greater than the spacing of said securing surface (54) and said intercepting surface (56) when said engagement head (44) contacts said gear carrier (14).

4,363,391

FEED PIPE FOR CONVEYING STICKY BULK MATERIAL

Peter Langen, Hanrathstrasse 43, 5303 Bornheim-Walberg, Fed. Rep. of Germany

Division of Ser. No. 962,007, Nov. 20, 1978, Pat. No. 4,286,702. This application Jun. 15, 1981, Ser. No. 273,464

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827602

Int. Cl.³ B65G *11/00*

U.S. Cl. 193—2 D 5 Claims

1. A straight, stationary feedpipe mounted vertically between a bunker outlet and an enclosed, pressurized conveyor system for feeding from a bunker to the pressurized conveyor

system bulk material of the type having a tendency to arch and for forming a pressure seal for the enclosed pressurized conveyor system, said feedpipe consisting of a plurality of serially connected, downwardly tapering tubular members of substantially identical design, rigidly connected together with the lower edge of each downwardly tapering tubular member laterally spaced around its entire periphery from the upper end of the adjacent lower tubular member by annular means extending completely around and filling the gap between adja-

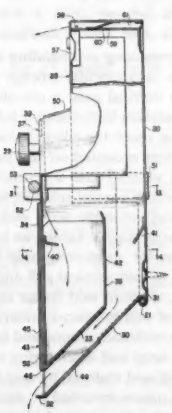
cent tapered tubular members to form a portion of the interior surface of said feedpipe which extends outward and faces downward to the extent that sticky bulk material can not cling to this surface in forming an arch, and wherein each of said tubular members has a ratio of its axial length to its average diameter which is smaller than that required for arching of the bulk material within that tubular member such that the feedpipe can be continuously filled with the bulk material to a level which seals the pressurized conveyor system, yet the bulk material remains free-flowing for feeding the conveyor system.

4,363,392

PRODUCT DISPENSER HAVING INCREASED COIN HOLDING CAPACITY

Winford G. McDonald, 128 Hill, Center, Tex. 75935

Filed Nov. 25, 1980, Ser. No. 210,224
Int. Cl.³ G07F *9/06*
U.S. Cl. 194—1 B **4 Claims**



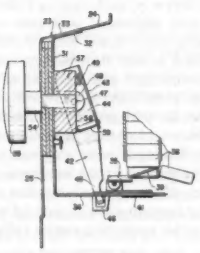
1. A dispenser for product units comprising an elongated vertical wall-attached support plate having a hinge knuckle at its lower end for the rotational support of a dispenser assembly, an elongated dispenser body portion including at least one product storage hopper and a coin mechanism for the release of product units one at a time from the hopper, and said body portion including an inclined bottom wall extending downwardly and forwardly from the lower end of said support plate at an acute angle to the support plate, a hinge knuckle on the body portion at the top of the inclined bottom wall and being supportively and rotationally engaged with the hinge knuckle of the support plate, the body portion including a product outlet at its front and at the bottom of said inclined bottom wall, means within the lower part of the body portion forming a downwardly tapering coin box support pocket above said inclined bottom wall and above said product outlet, a vertically elongated coin box including a downwardly tapering lower end portion having an inclined bottom wall parallel to the bottom wall of the body portion and being removably engageable in said pocket, the coin box being disposed under the coin mechanism while resting in said pocket, the back of said body portion being open to permit removal of the coin box therefrom, means to releasably lock the top of said body portion to the top of the support plate with the body portion in an upright position and with said hinge knuckles supportively engaged, and a guard for the lower end portion of the dispenser comprising a three-sided structure adapted to extend around the front and side walls of the body portion and having a partial bottom wall which is inclined and parallel to the bottom wall of the body portion and adapted to engage under the bottom wall of the body portion, and the guard having a product outlet in registry with the outlet of the body portion, and means to releasably lock the guard on the dispenser.

4,363,393

COIN CONTROLLED MECHANISM FOR VENDING MACHINE

Winford G. McDonald, 128 Hill, Center, Tex. 75935

Filed Feb. 23, 1981, Ser. No. 237,502
Int. Cl.³ G07F *5/04, 11/22*
U.S. Cl. 194—63 **10 Claims**



2. A coin mechanism for a merchandise dispenser of the type having at least a single merchandise column from the bottom of which merchandise units are dispensed one at a time, said coin mechanism comprising a supporting body portion adapted for attachment to a dispenser, a combined unitary back plate and platform fixed to the body portion with the back plate spaced from a front wall of the body portion, a pocketed coin transport wheel disposed between said back plate and said front wall, a manual rotational drive shaft means for said wheel operable from the front of said body portion, a spring-urged anti-reverse blocking element for said wheel on said back plate, a lobed cam fixed to the drive shaft means at the side of the back plate away from said wheel, a cam lever rockably mounted on the unitary back plate and platform including a follower element in the path of movement of the cam, compressive coil spring return means for the cam lever between the cam lever and back plate, and a merchandise pusher slidably engaged with the platform and drivingly coupled with the end of the cam lever away from said coil spring return means.

4,363,394

APPARATUS FOR CONVEYING ROLLED STOCK

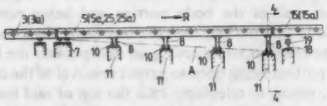
Hans Kirchhoff, Krefeld, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,773

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850174

Int. Cl.³ B65G *47/10*

U.S. Cl. 198—369 9 Claims



1. In an apparatus for selectively conveying rolled stock of flexible and relatively bending resistant profiled cross-sections of different cross-sectional shape in continuous high grade steel and medium grade steel rolling trains, wherein two mutually approximately parallel conveying lines each convey rolled stock to a respective cooling bed, each conveying line comprising an inlet rollerway and a downstream outlet rollerway having an upstream end and a downstream discharge end, the respective cooling beds being arranged downstream and laterally of the outlet rollerways for receiving rolled stock discharged therefrom, each outlet rollerway having a conveying surface inclined across the conveying direction towards the respective cooling bed and each outlet rollerway being pivotable about said discharge end so that either both cooling beds are charged simultaneously by both inlet rollerways in approximately parallel conveying directions, or one or the other cooling bed is charged by one or the other inlet rollerway, the improvement comprising providing between the inlet rollerways and the outlet rollerways two tipping rollerways each having an upstream end and a downstream end, the upstream end of each tipping rollerway being fixedly aligned with a respective inlet rollerway, each tipping rollerway being swingable selectively into alignment with one or the other outlet rollerway and being constructed with pivotable support means and being provided at said downstream end with means for swinging said downstream end along an arcuate path about a swing axis which is inclined downwardly in the conveying direction, said arcuate path tracing substantially the surface of a cone along which said tipping rollerway is swingable, each tipping rollerway having a conveying surface having substantially the same inclination in the conveying direction as said conveying surface of the respective outlet rollerway when in line therewith for smooth conveyance of stock from the tipping rollerway to the respective outlet rollerway.

4,363,395

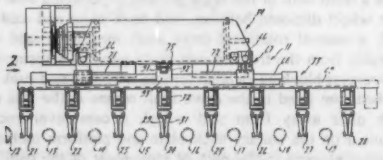
MATERIAL HANDLING DEVICE

George Mink, 38296 Horseshoe Dr., Mt. Clemens, Mich. 48043

Filed Sep. 10, 1980, Ser. No. 185,986

Int. Cl.³ B65G *25/00*

U.S. Cl. 198—486 6 Claims



1. A material handling device for moving a work piece in succession between a plurality of adjacent work stations positioned in aligned relationship, said material handing device comprising a plurality of gripping means each adapted to selectively grip and release a work piece, a support, means for affixing said gripping means to said support, and motion transfer means for moving such support and said gripping means carried thereby from a home position in which said gripping means are positioned in aligned relation with the work stations and between the adjacent work stations, to a first operative position having at least a component of movement along the aligned path in which a work piece may be grasped at each work station, a second operative position having at least a component of movement along the aligned path wherein said gripping means move the work pieces gripped thereby from the first work stations to the next adjacent work stations for deposit upon release of said gripping means, and back to said home position between the work stations.

4,363,396

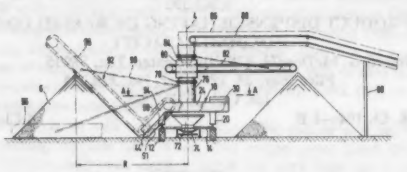
DEVICE FOR BUILDING-UP AND DISCHARGING AN ANNULAR DUMP OF BULK MATERIAL

Helmut Wolf, Sielkamp 52, 3300 Braunschweig, Fed. Rep. of Germany, and Hans J. Schlegel, 6129 72nd La., North, Minneapolis, Minn. 55429

Continuation of Ser. No. 67,839, Aug. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 850,704, Nov. 10, 1977, abandoned. This application Feb. 12, 1982, Ser. No. 348,368

Int. Cl.³ B65G *65/06*

U.S. Cl. 198—508 13 Claims



13. Apparatus for removing and building up of bulk material from and onto heaps on a circular storage site, comprising a foundation having a vertical axis, a circular support fixedly mounted on said foundation in concentric relation with respect to said vertical axis for receiving a load in bearing and rotating relation thereon, a frame mounted on said support for rotation therewith about said vertical axis, a central column mounted on said frame in generally coaxial relation with respect to said vertical axis and being rotatable with said frame about said vertical axis, a discharge hopper having an unobstructed upper receiving end, means for supporting said hopper in coaxial relation with respect to said vertical axis and independently of said central column, wherein said frame and column are rotated independently of said hopper, a material removal device mounted for rotation with said column and frame for removing said material from a heap and discharging it into said hopper without obstruction of said material by said hopper supporting means, and dumping means mounted on said column for independent rotation relative thereto and above said material removal device for selectively dumping material onto a heap for the removal therefrom by said removal device, said frame including parallel supports that extend generally parallel to the longitudinal axis of said material removal device, a structure joined to said supports on said frame and supporting said column thereon, wherein said column and frame are rotatable on said circular support.

4,363,397

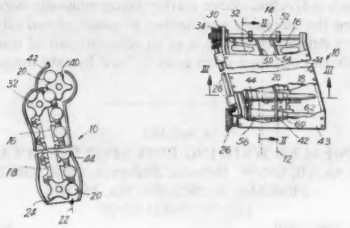
Z-TRANSFER DEVICE FOR AMMUNITION

Earl D. Richey, Irvine, and Franklin A. Dobson, Costa Mesa, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1981, Ser. No. 238,721

Int. Cl.³ B65G *49/00*

U.S. Cl. 198—655 4 Claims



1. A transfer device for rounds of ammunition comprising:

a plurality of buckets each adapted for receiving one of the rounds of ammunition at a first location and for delivering it to a second location, said first and second locations being laterally offset from each other;

means for linking said buckets in an endless chain;

means for guiding said buckets from said first location to said second location;

said means for linking being effective to permit adjacent ones of said buckets to be laterally displaced from each other and being further effective to maintain all of said buckets parallel to each other; and

means for retaining said rounds in said buckets during transfer thereof.

4,363,398

SCRAPER-CHAIN CONVEYORS

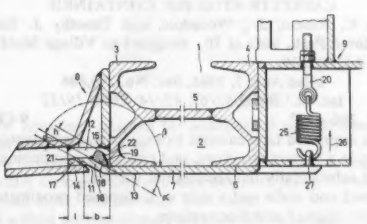
Helmut Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,242

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922826

Int. Cl.³ B65G *19/28*

U.S. Cl. 198—735 17 Claims



1. A pan or channel section for a scraper chain conveyor comprising: side walls; a floor plate extending between said side walls defining upper and lower runs; and means permitting access to said lower run comprising a removable bottom plate which covers the lower run from beneath, said bottom plate having a main body having longitudinal side edges, wherein one of said edges is provided with at least one extension member angulated with respect to said bottom plate, means defining a pocket for receiving said extension member to secure said bottom plate in its normal operating position, said bottom plate being removable only after pivoting said bottom plate and said extension member through an angle with respect to said pocket, and a dog forming a retention piece fixed to the upper surface of said at least one extension member to rotate at least closely adjacent to a roller extension portion of one of the side walls.

4,363,399

BELT CONVEYOR

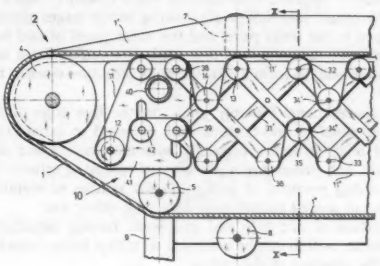
Peter Ludwig, and Heinrich Hörstermann, both of Rosenweg 9, 5982 Neuenrade, Fed. Rep. of Germany

Continuation of Ser. No. 969,219, Dec. 13, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,297

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756363

Int. Cl.³ B65G *23/14, 15/08*

U.S. Cl. 198—833 4 Claims

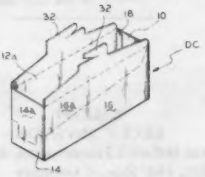


1. A belt conveyor, comprising a carrying belt unit which includes an endless carrying belt having an upper load-carrying run adapted to carry loads and movable in a direction of transportation, and a plurality of supporting rollers arranged to support and guide said load-carrying run of said carrying belt unit; a friction belt unit which includes an endless friction belt having an upper run which is movable in said direction and is in frictional contact with said load-carrying run of said carrying belt, a plurality of bearing rollers arranged to support and guide said one run of said friction belt, and a plurality of deviating rollers which are located between and offset downwardly relative to said bearing rollers so that said one run of said friction belt moves about said deviating rollers and is alternately guided by the same into and out of frictional contact with said load-carrying run, said upper run of said friction belt being guided by said bearing rollers and some of said deviating rollers; a frame having side walls which are formed as a parallel linkage mounting said bearing rollers and said deviating rollers on said frame and including a plurality of flat bars which cross and are articulately connected with each other, said parallel linkage having upper knee points in which axes of said bearing rollers are located, and cross points in which axes of said deviating rollers are located; and a conveyor frame including a plurality of uprights and two longitudinal walls formed as a further parallel linkage extending between two adjacent uprights and each having a plurality of bars which cross and are articulately connected with each other, said longitudinal walls having end portions each connected to a respective one of said uprights, each of said end portions being connected to a respective one of said uprights by a fixed pivot extending in one plane and a displaceable pivot extending in another plane.

4,363,400
DISPLAY CARTON WITH INTERNAL SPACER

Phillip W. Lewis, Greensboro, N.C., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 15, 1981, Ser. No. 283,432
Int. Cl.³ B65D 5/50
U.S. Cl. 206—44 R 3 Claims



1. In a collapsible display carton, formed of a unitary blank of foldable paperboard, for holding and displaying a plurality of articles such as carded packages, the combination comprising of:

(a) a bottom wall including an inner panel and an outer panel;

(b) pairs of opposed side and end walls foldably joined to each other, said side walls having lower edges thereof joined to the inner panel and the other panel of said bottom wall, said side and end walls upstanding from said bottom wall to form a box-like body structure open at the top;

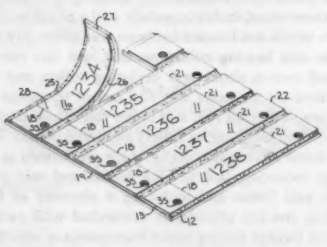
(c) a spacer panel foldably joined to the free edge of the inner panel of said bottom wall, disposed to extend into said body structure inwardly adjacent one of said side walls, and presenting a plurality of spaced apertures for receiving portions of said packaged articles to maintain them in spaced relationship with each other; and

(d) certain of said side and end walls having detachable portions which can be removed to afford better viewing of the contents of the carton.

4,363,401
SLEEVE MARKER ASSEMBLY

Michael D. Savagian, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Sep. 28, 1981, Ser. No. 306,045
Int. Cl.³ B65D 85/20, 63/00
U.S. Cl. 206—345 4 Claims



1. A sleeve marker assembly comprising, in combination:

(1) a base web and top web superposed upon one another, both webs being of equal width and having longitudinal axes arranged parallel to each other;

(2) a plurality of spaced transverse seals joining the base web and the top web together at preselected intervals, the transverse seals being arranged perpendicular to the longitudinal axes of the base web and top web;

(3) a first row of spaced longitudinal slits defined in a first marginal edge portion of the assembly, each said slit extending through the base web and top web and separated from one another by connecting lands comprising portions of the transverse seals;

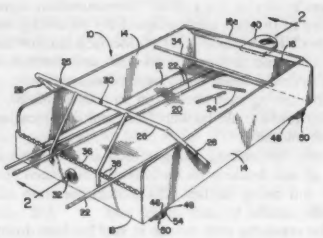
(4) a second row of spaced longitudinal slits defined in a second marginal edge portion of the assembly opposite from the first marginal edge portion and arranged parallel to the first row of spaced longitudinal slits, each said slit extending through the base web and top web and separated from one another by connecting lands comprising portions of the transverse seals;

(5) each individual sleeve marker being manually detachable from the assembly and having opposed closed edge portions defined by portions of an adjacent pair of transverse seals and opposed open ends defined by said longitudinal slits.

4,363,402
OPEN-FACED WELDING ROD/STUB RECEPTACLE

John V. Grzyll, 606 W. Roberta, Fullerton, Calif. 92632

Filed May 8, 1981, Ser. No. 261,879
Int. Cl.³ B65D 85/26
U.S. Cl. 206—380 9 Claims



1. A welding rod and stub apparatus, comprising:

a receptacle having an open-faced compartment to receive welding rods and stubs therein;

means on said receptacle to retain said welding rods within said compartment;

a handle angularly attached to said receptacle, whereby said receptacle can be carried or secured angularly; and

means formed between said handle and said receptacle to selectively divide said rods in groups by size and type.

4,363,403
CASSETTE STORAGE CONTAINER

Charles C. Raucci, Jr., Wooddale, and Timothy J. Raucci, Handover Park, both of Ill., assignors to Village Mold Co., Inc., Addison, Ill.

Filed Aug. 7, 1981, Ser. No. 290,886
Int. Cl.³ B65D 85/67, 43/14; E05C 19/12
U.S. Cl. 206—387 9 Claims

1. An improved tape cassette storage container adapted for molding in a unitary structure, said container comprising

a first substantially flat rectangular surface;

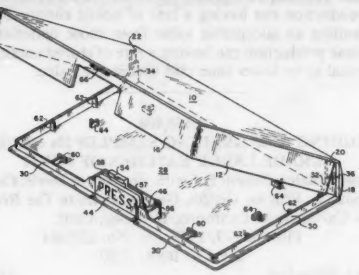
opposed end walls and a side wall disposed proximate the outer edge of said first surface;

a spine member hingedly molded to the edge of said first surface opposite said side wall, having upstanding tabs disposed proximate each end thereof, each said tab being disposed inwardly of the end walls on said first surface and having an aperture disposed therethrough;

a second substantially flat rectangular surface hingedly molded to the edge of said spine member opposite said first surface;

a lip member disposed proximate the edges of said second surface other than the edge adjacent said spine member, said lip member being in substantial linear alignment with said tabs on the ends of said spine member;

an upwardly extending member disposed at each end of said lip member adjacent said spine member, each said member having an outwardly extending tab disposed thereon such that rotation of said spine member and said second surface toward one another causes said outwardly extending tabs on said upwardly extending members to engage said apertures disposed in said upstanding tabs disposed at the ends



of said spine member, whereby said spine member is retained at substantially a right angle with respect to said second surface; and

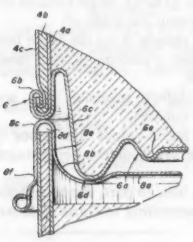
whereby rotation of said first surface toward said spine member causes said end and side walls on said first surface to engage the outer surface of said lip member on said second surface to thereby provide a closed container.

4,363,404

END CLOSURE FOR STACKABLE FROZEN FOOD CONTAINERS

Teddy M. Westphal, Glencoe, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Filed Mar. 30, 1981, Ser. No. 248,901
Int. Cl.³ B65D *21/02, 3/14*
U.S. Cl. 206—508 **6 Claims**



1. A container adapted for institutional use for containing frozen foods, comprising:

(a) a tubular composite body wall (4) including, in concentrically arranged relation, an inner liner layer, fibrous body wall layer, and an outer label layer;

(b) a rigid bottom closure member (6) including

(1) a cylindrical generally vertical intermediate portion (6*c*);

(2) an annular rim portion (6*b*) connecting the upper end of said intermediate portion with the lower end of said body wall;

(3) a horizontal circular disk-shaped central panel portion (6*a*) arranged in concentrically spaced relation within said intermediate portion; and

(4) means connecting said central panel portion with the lower edge of said intermediate portion at a position having a higher elevation than that of the lower edge of the vertical intermediate portion and a lower elevation than that of said annular rim portion, said connecting means cooperating with said intermediate portion to define a downwardly extending annular stacking rib (6*d*); and

(c) a rigid top closure member (8) closing the upper end of said composite body wall, said top closure member containing an annular recess (8*b*) for receiving the stacking rib of a second container stacked vertically thereon,

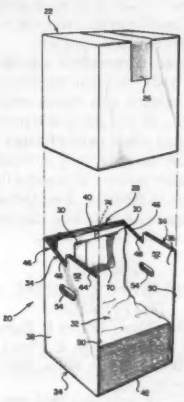
whereby when the container is provided with a liquid or fluent material that is subjected to progressively decreasing temperature, freezing of the material proceeds upwardly in the container from the rib and central panel portions of the bottom closure member.

4,363,405

DISPENSING CARTON FOR PLASTIC GROCERY BAGS

Eugene P. Christie, 543 Granville, Hillside, Ill. 60162

Filed Jul. 20, 1981, Ser. No. 284,941
Int. Cl.³ B65D *85/62;* B65B *67/04;* A47F *7/00*
U.S. Cl. 206—554 **5 Claims**



1. A disposable shipper-dispenser for plastic film bags comprising: a carton top member comprising a parallelepipidon having an open bottom; and a carton bottom member adapted to be slidably telescopingly received in said carton top member, including spaced sidewall elements and back panel and bottom panel elements interconnecting said sidewall elements, said elements defining a substantially open top and a substantially open front, each of said sidewall elements having a top edge which includes a downwardly and forwardly inclined bag-handle-guide edge portion and a substantially vertically extending intermediate edge portion defining a stop at the forward end of said inclined guide edge portion, each of said sidewall elements having a vertical front edge spaced forwardly apart from the respective vertically extending top edge stop portion to define a bag-handle spreader-hanger therebetween.

4,363,406

FLUID DRAINAGE BAG WITH TEAR TAB DRAIN

Lawrence A. Salvadori, Milwaukee, Wis., assignor to Plastronics, Inc., Milwaukee, Wis.

Continuation of Ser. No. 58,067, Jul. 16, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,909
Int. Cl.³ B65D *33/02, 33/00*
U.S. Cl. 206—604 **5 Claims**

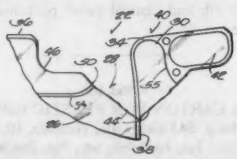
1. A fluid drainage bag comprising:

a bag body including a top edge and an adjoining side edge,

said top edge and said adjoining side edge together defining a corner section of said bag body;

an internal fluid chamber within said bag body having an inlet port and an outlet port;

an outlet extension portion communicating with said outlet port and having a sealed end portion spaced from said outlet port, said outlet extension portion located within said corner section of said bag body, the material of said outlet extension portion in the area of said outlet port is not weakened by a score line or similar means;



a seam in said corner section defining a preformed section of a tear line extending from said top edge of said bag body toward said outlet extension portion;

a tab member formed intermediate said seam and said top edge of said bag body, said tear tab adapted when initially pulled laterally toward said outlet extension portion to cause the bag body to tear along said preformed tear seam and further adapted when pulled further to cause the bag body to tear across the previously unweakened material of said outlet extension portion to thereby create an opening at said outlet port to facilitate drainage of fluid from said internal fluid chamber within said bag body.

4,363,407

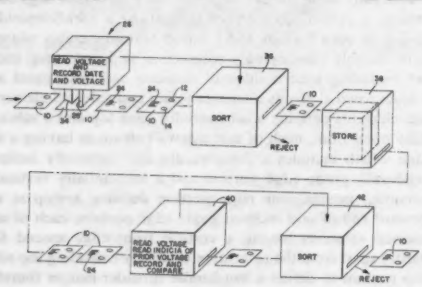
METHOD AND SYSTEM FOR TESTING AND SORTING BATTERIES

Sheldon A. Buckler, Brookline; Jeffrey B. Burns, Natic; Alfredo G. Kniazzeh, West Newton; Paul A. Plasse, Lexington, and David J. Sullivan, Bolton, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 22, 1981, Ser. No. 227,477

Int. Cl.³ B07C *5/02, 5/344*

U.S. Cl. 209—3.3 **16 Claims**



1. The method of testing and sorting a production run of electric batteries prior to assembly and packaging thereof with related goods to be merchandised with individual batteries of such a production run, said method comprising the steps of:

(a) testing each individual battery of the production run to obtain a first value of electrical energy for each such battery;

(b) forming machine readable indicia on each such battery corresponding to said first value;

(c) storing the batteries after completion of steps (a) and (b);

(d) retesting each of the individual batteries after passage of an elapsed period of time following step (a) to obtain a second value of electrical energy for each battery;

(e) machine reading said indicia and computing, in accordance with said elapsed period of time of each battery, the rate of decay of electrical energy for each individual battery as a function of the difference between said first and second values per unit time; and

(f) sorting said batteries in accordance with said computed rate of decay to separate those individual batteries of the production run having a rate of stored energy decay extending an acceptable value from those batteries of the same production run having a rate of stored energy decay equal to or lower than said acceptable value.

4,363,408

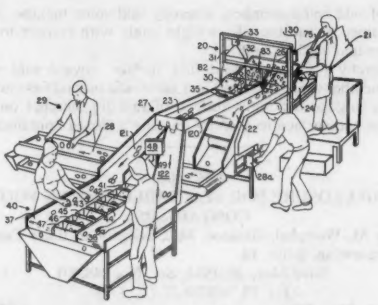
WEIGHING AND GRADING SAMPLES IN ORDER TO GRADE LARGE BATCHES OF FRUIT

Michael O'Brien; Nelson E. Smith, Jr., both of Davis, Calif., and Stanley E. Prussia, Griffin, Ga., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Jan. 7, 1981, Ser. No. 223,161

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—546 **21 Claims**



1. A method of grading large batches of fruit by sampling technique, comprising the steps of:

withdrawing a sample from the large batch of fruit,

weighing at least a portion of said sample, inspecting the weighed fruit,

placing grade-defect material into separately classified grade-defect buckets,

weighing each grade-defect bucket one by one,

determining the grade-defect percentages at the computer, and

determining, at least in part, the acceptance and grade of the large batch according to those percentages.

4,363,409

MULTI-PURPOSE UTILITY VEHICLE

Victor R. Laurich-Trost, 34600 McAfee Dr., Solon, Ohio 44139

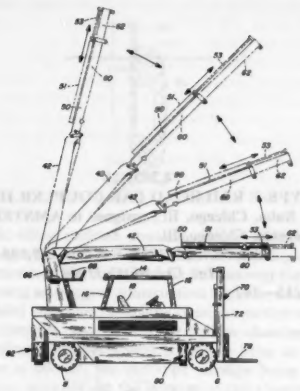
Filed Dec. 26, 1979, Ser. No. 106,468

Int. Cl.³ B66C *23/00;* B65S *9/00*

U.S. Cl. 212—184 **9 Claims**

1. A Multi-Purpose Utility Vehicle comprising a vehicle chasis mounted for movement on a plurality of wheels, said chasis mounting adjacent the rearward end a telescopic boom assembly disposed for continuous rotation movement about a vertical axis through 360° a hydraulically actuated lift platform assembly disposed forwardly of such chasis, a pantograph-type outrigger assembly mounted at the rearward and forward ends of said chasis for supporting the vehicle during usage thereof said outrigger assembly including a rearward outrigger mechanism and a forward outrigger mechanism, said forward mechanism including a transverse outer tube section fixedly attached to said chasis, a pair of transversely extending inner tube sec-

tions disposed for telescopic sliding movement within said outer tube section, hydraulic motor means for transversely extending and contracting said inner tube sections in relation to said outer tube section, hydraulic jack means operably connected adjacent the outer ends of said inner tube sections adapted for vertical movement for raising and lowering said vehicle chasis, said rear outrigger mechanism including a pair of oppositely disposed longitudinally extending outer tube



sections fixedly mounted on said vehicle chasis with telescopic intersections disposed interiorally of said outer sections for telescopic extension and contraction in a longitudinal direction, a transverse outer section fixedly connected to the outer ends of said longitudinal sections, transverse intersections mounted for telescopic movement within said transverse outer section, and hydraulic jack means being operably connected to the outer ends of said transverse intersections for vertical movement for raising and lowering said vehicle chasis.

4,363,410

SPLIT TOPPING LIFT GEAR

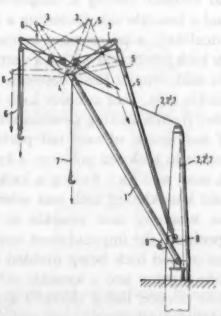
Ernst-Helmuth Sprengel, Hamburg, Fed. Rep. of Germany, assignor to Blohm & Voss AG, Hamburg, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,192

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945012

Int. Cl.³ B66C *23/52*

U.S. Cl. 212—190 **4 Claims**



1. Split topping lift gear, such as used on ships, comprising a cargo boom swingable through a plane between a pair of posts, said boom having a lower end and an upper end, a jib hingedly connected to said boom adjacent the upper end thereof, said jib being elongated having a first end and a second end spaced apart in the elongated direction thereof and being connected to said boom at a position spaced from said first and second ends, a first relieving cargo tackle connected to the first end of said jib and a second relieving cargo tackle connected to the second end of said jib, said jib being movable in a vertical plane independently of the movement of said boom, a boom socket secured to said boom adjacent the lower end thereof, said boom socket having two parts each extending from an opposite side of said boom so that one of said first and second relieving tackles is fixed to one of said boom socket parts for adjusting the position of said jib and the other one of said first and second relieving cargo tackles is arranged to support a load.

4,363,411

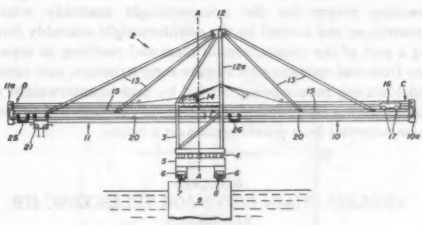
HAMMERHEAD CRANE WITH PLURAL SHUTTLE TROLLEYS, A LOAD TROLLEY AND MOVABLE COUNTERWEIGHT MEANS

Gilbert Blair; Roy A. Behling, both of Coraopolis, and Richard Collins, Allison Park, all of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 3, 1978, Ser. No. 921,787

Int. Cl.³ B66C *23/52*

U.S. Cl. 212—191 **11 Claims**



1. A hammerhead crane having a vertical tower with a pair of horizontal parallel spaced continuous members extending through said tower near the top thereof, said members defining pairs of cantilevered tracks that extend laterally from the vertical center of said tower, said cantilevered tracks including a fixed end structure at each end thereof with a plurality of sheaves mounted thereon comprising:

(a) a counterweight movably mounted on a first one of said tracks, a drum, cable means extending from said drum and attached to said counterweight to selectively move same between the ends of said first track;

(b) a load trolley movable along a second one of said tracks;

(c) a first and second shuttle trolley movably mounted on said second track and movable along said second track between a respective outer end and the middle portion of said second track, the range of travel of each shuttle trolley being one-half the total range of travel of said load trolley, a plurality of sheaves mounted on each of said shuttle trolleys;

(d) a first cable attached at one end to said counterweight and reeved about sheaves on one of said fixed end structure and then toward said tower and about a sheave on said first shuttle trolley, and then anchored to one of said fixed end structure;

(e) a second cable attached at one end to said counterweight and reeved about sheaves on the other one of said fixed end structure and then toward said tower and about a sheave on said second trolley, and then anchored to said other one of said fixed end structure;

(f) compensating cable means attached to said tower and operatively connecting each of said first and second shuttle trolleys with said load trolley, the arrangement of said drum, cable means, compensating cable means, first and second cables being such that when said counterweight is

moved in one direction along said first track, said shuttle trolleys will move along said second track in an opposite direction at half the speed of said counterweight and said load trolley will move along said second track at the same speed as said counterweight.

4,363,412

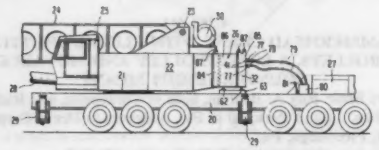
CRANE COUNTERWEIGHT AND HANDLING METHOD

Ramesh P. Patel, Hagerstown, Md., and Alfred Bonnell, Jr., Greencastle, Pa., assignors to Kidde, Inc., Clifton, N.J.

Filed Aug. 14, 1980, Ser. No. 178,344

Int. Cl.³ B66C *23/76*

U.S. Cl. 212—196 **16 Claims**



1. A crane counterweight assembly comprising a body portion adapted for supportive attachment to a crane superstructure to counterbalance the superstructure, and raising and lowering means for the counterweight assembly wholly mounted on and carried by the counterweight assembly forming a part of the counterweight mass and enabling its separation from and mounting on a crane superstructure, said raising and lowering means being carried by said counterweight assembly during its separated and mounted positions and adapted to be powered by a power means on a crane.

4,363,413

ENDLESS CHAIN DRIVE FOR TELESCOPIC JIB SECTIONS

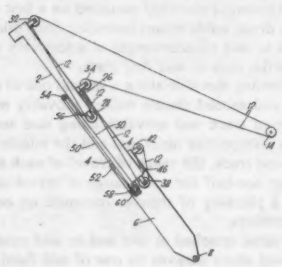
Karl M. Gyomrey, Belmont, England, assignor to Coles Cranes Limited, Sunderland, England

Filed Aug. 18, 1980, Ser. No. 179,360

Claims priority, application United Kingdom, Aug. 27, 1979, 7928799

Int. Cl.³ B66C *23/04, 23/70, 23/82*

U.S. Cl. 212—262 **11 Claims**



1. A telescopically extensible boom crane comprising:

a base boom section mounted to a crane platform;

an intermediate boom sectionry telescopically mounted within said base boom section, said sectionry comprising at least one intermediate boom section;

a head boom section telescopically mounted within said intermediate sectionry;

flexible boom section extension means including a closed loop extending the length of said intermediate sectionry between an inner loop guide means mounted to a base end of said intermediate sectionry and an outer loop guide means mounted to a head end of said intermediate sectionry;

means for securing said loop to said head section and to said base section at fixture points; and

means mounted to said intermediate sectionry for driving said loop whereby actuation of said drive means to drive said loop extends or retracts said boom.

4,363,414

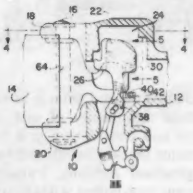
TYPE-E RAILROAD CAR COUPLER HEAD

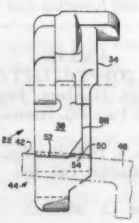
John W. Kaim, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 24, 1980, Ser. No. 209,896

Int. Cl.³ B61G *3/004*

U.S. Cl. 213—147 **3 Claims**





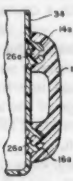
1. In a railroad coupler having a coupler head having a guard arm side and a knuckle side including a knuckle swingable about a vertical axis, a tail portion extending from said knuckle, a coupler lock positioned within a vertical lock chamber formed within said coupler head between said guard arm side and said knuckle side, said coupler lock being movable within said chamber from a locking position wherein said lock is in the path of movement of said tail portion knuckle to maintain said knuckle in a closed position, a knuckle thrower having a leg lock seat, said lock having a lock set seat in engagement with said knuckle leg lock seat when moved to an unlocked position whereby said knuckle is free to swing toward an open position, the improvement comprising,

said lockset seat of said lock being divided laterally into a guard arm side portion and a knuckle side portion, said guard arm side portion being laterally sloped to engage with said knuckle thrower leg lock seat to tilt said lock toward said guard arm side of said coupler head thereby to minimize the spacing between said lock and said knuckle tail portion and reduce inadvertent contact between said lock and said knuckle tail portion.

4,363,415
BLOW MOLDED CONTAINER WITH SEPARATE HANDLE

Dewey Rainville, Westfield, N.J., assignor to Rainville Company, Inc., Middlesex, N.J.

Division of Ser. No. 74,137, Sep. 10, 1979, Pat. No. 4,281,770.
This application Mar. 11, 1981, Ser. No. 242,423
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ B65D *25/28*
U.S. Cl. 215—100 A 2 Claims

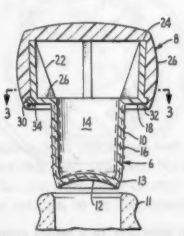


1. A plastic blow molded container made of stretchable material having a side wall, bottom, and an opening through which the contents of the container can be removed therefrom, a boss comprising an integral construction with the side wall of the blow molded container, a hollow chamber within the boss and with an entrance passage into the hollow chamber at the end of the hollow chamber which is remote from an outside surface of the container, the entrance passage being of less transverse cross section than the interior of the chamber normal to the longitudinal axis of said entrance passage, a handle that is a different piece from the container, a projection on the handle for insertion into the hollow chamber in the boss, said projection having a head larger than the cross section of said entrance passage, the walls of the chamber that terminate at the sides of said entrance passage being flexible and elastic enough to yield and stretch to pass the end of the projection into a portion of the chamber that is larger than the cross section of the passage, and said head being shaped to exert a cam action that stretches the entrance into the hollow chamber of the boss when the head of the projection is pushed into the chamber, said head being also shaped to obtain less cam action at the rear of the head so that it cannot be pulled out of the boss as easily as it is pushed in.

4,363,416
WINE CORK

Bert E. Loughmiller, Benicia, Calif., assignor to APM, Inc., Benicia, Calif.

Filed Jul. 15, 1981, Ser. No. 283,501
Int. Cl.³ B65D *39/00*
U.S. Cl. 215—364 1 Claim



1. A two piece wine cork comprising in combination:

a. a bottom portion, said bottom portion having a plug portion of a size to fit into a wine bottle, said plug portion having a hollow interior and a closed bottom and having a plurality of circumferential ridges thereon, a flat rim portion extending outwardly from the top of said plug portion and a cylindrical upstanding shoulder above said rim, said shoulder being smaller in diameter than said rim and being larger in diameter than said plug portion, and a plurality of radial buttress elements within said shoulder, starting at the top of said shoulder and sloping inwardly and downwardly to connect with the inner surface of said rim,

b. a top portion fitting over said shoulder having a curved outer surface of pleasing design and a cylindrical inner surface complementary to said shoulder to form a tight fit with said shoulder, both at the top and sides,

c. a groove on the inside of said top portion near the bottom terminal edge adapted to snap over said rim and hold the two parts together and,

d. mating radial ridges and depressions on said rim and said groove to prevent the two parts from turning relative to each other.

4,363,417
DUSTLESS CONTAINER FOR ASHES OR THE LIKE

Deo A. Rhoades, and Betty L. Rhoades, both of Rte. 1, Grand Junction, Mich. 49056

Filed Oct. 30, 1980, Ser. No. 202,164
Int. Cl.³ B65D *25/28*
U.S. Cl. 220—1 T 7 Claims

4. A dustless container for ashes or the like, comprising a receptacle having a bottom wall,

side wall means extending upwardly from said bottom wall and enclosing the sides of said receptacle,

said side wall means including a substantially flat vertical wall,

a cover for opening and closing the top of said receptacle,

said wall having an entry opening in the upper portion thereof,

a flat plate-like door for opening and closing said entry opening,

a plate-like deflector connected to the lower end portion of said door and extending through the lower portion of said entry opening into said receptacle for deflecting ashes into said receptacle and away from said opening when said door is open,

said door being swingable about its lower end portion between a closed position against the outside of said wall to close said opening and an open position with the upper portion of said door swung away from said wall to open said opening,

said deflector being of a width corresponding generally to the width of said opening to fit through said opening,

said door being of a width greater than the width of said opening to remain outside of said opening,

a pair of plate-like side members connecting with the back of said door and extending from said door and through said opening into said receptacle for guiding the ashes into said receptacle,

said door together with said deflector and said side members

forming a downwardly sloping conveyance chute for conveying the ashes into said receptacle,

and stop means on at least one of said side members for limiting the outward swinging movement of said door,

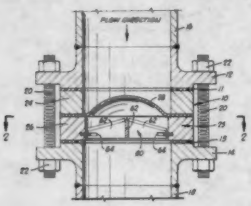
said stop means being engageable with the inner side of said vertical wall adjacent said opening.

4,363,418

KNIFE BLADE APPARATUS FOR SEVERING RUPTURE DISKS

Duane G. Matz, Broken Arrow, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Feb. 11, 1982, Ser. No. 348,083
Int. Cl.³ F16K *17/40*
U.S. Cl. 220—89 A **11 Claims**



1. An improved knife blade apparatus adapted to be installed in a rupture disk assembly whereby upon failure of a rupture disk in the assembly, the disk is severed by the knife blade apparatus comprising:

an annular support member adapted to be installed in said assembly, said support member including an annular groove disposed interiorly therein;

knife blade means disposed interiorly of said support member, said knife blade means including one or more exterior portions each of which includes a groove therein complementary to and positioned adjacent the interior of said support member and the annular groove disposed therein; and

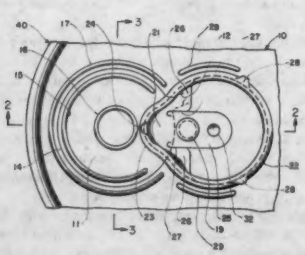
an annular snap ring disposed in said annular groove in said support member and in said grooves in said one or more exterior portions of said knife blade means whereby said knife blade means are held within the interior of said support member but are not rigidly attached thereto.

4,363,419

SELF-STORING PERMANENTLY ATTACHED CAN OPENING MEANS

Karl Walz, Sr., 24 Purchase St., Worcester, Mass. 01606

Filed Sep. 8, 1981, Ser. No. 300,052
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—269 **7 Claims**



1. On a hollow container for pourable contents contained therein sealably closed by a thin-walled cover therefor, and having attached thereto manually operable opening means therefor,

the combination on the thin-walled cover thereof, of:

a relatively movable flap portion delineated by a continuously arcuately curved breakaway peripheral edge with mutally spaced hooked ends together defining a first self-hinged portion flexibly supporting the flap portion of said cover for movement from a first stored position in sealed engagement with the surrounding relatively fixed portion of said cover to a second open position substantially perpendicular to the surrounding relatively fixed portion of said cover and within a container to which said cover is attached,

a pull tab having an annular ring portion with a continuously arcuately curved periphery so shaped and sized it may be mutually engaged and interfitted with the continuously arcuately curved edge of the access opening through said cover provided by rotating said flap portion from its first to its second position,

said annular ring portion of said pull tab supporting a relatively smaller flap actuating portion projecting outwardly therefrom and being supported resiliently by a pull tab mounting portion projecting inwardly therefrom to which said annular ring portion is connected by a second flexible self-hinged portion for manually actuated movement from a first ready position with the annular ring portion of said pull tab disposed adjacent to and spaced slightly from the outer surface of said cover to a second protective position with its periphery mutually engaged and interfitted with the edge of the access opening through said cover, and

attachment means securely connecting said pull tab mounting portion of said pull tab to said cover with the flap actuating portion of said pull tab overlying said flap portion of said cover,

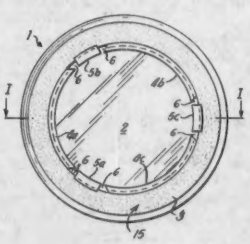
whereby manual movement of said pull tab from its first ready position to its second protective position so moves the flap actuating portion of said pull tab as to move the flap portion of said cover from its first stored position sealably closing said cover to its second open position to release the pourable contents of a container to which said cover is attached.

4,363,420

APERTURE PLUGS

Sydney A. Andrews, Stapleford, England, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 30, 1981, Ser. No. 229,896
Int. Cl.³ B65D *39/00*
U.S. Cl. 220—307 **6 Claims**



1. A plug for an aperture in a panel comprising:

an insert portion adapted for insertion into the aperture,

a flange portion having an under surface adapted to overlie an upper surface region of the panel adjacent the aperture, and

a body of sealant material in contact with said under surface of said flange portion,

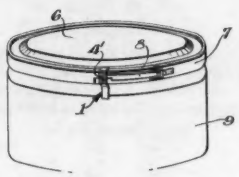
said insert portion comprising a plurality of neck portions, and a pluralty of resiliently flexible elements arranged between said neck portions so as to be resiliently flexed during insertion of said insert portion into the aperture and so as, thereafter, to retain said insert portion within the aperture.

4,363,421

SECURITY SEAL FOR CONTAINERS

Richard G. Shoemaker, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,927
Int. Cl.[3] B65D *45/32*
U.S. Cl. 220—319 5 Claims



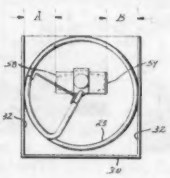
1. A security seal for a container closure device comprising a strip of resilient plastic film whose lengthwise dimension exceeds the width of said closure device, said strip having on the inner surface thereof a coating of tamper-resistant adhesive, said coating having an adhesive-free gap intermediate the ends thereof, the length of said gap being at least equal to the width of said closure device, whereby said strip may be adherently fixed to said container across said closure device with said adhesive-free gap held closely over said closure device and under convex flexural tension.

4,363,422

HELICAL VENDING MACHINE WITH EXPANSIBLE DIVIDER

William C. Boettcher, Foley, Mo., assignor to D.O.V.E. Equipment Corporation, Winfield, Mo.

Continuation-in-part of Ser. No. 35,421, May 2, 1979, Pat. No. 4,258,860, and Ser. No. 139,991, Apr. 14, 1980, Pat. No. 4,312,460. This application Mar. 27, 1981, Ser. No. 248,556
Int. Cl.[3] G07F *11/36*
U.S. Cl. 221—75 8 Claims



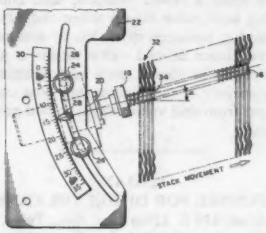
1. A vending machine item discharge unit comprising:
(a) a tray means having side, rear and bottom walls,
(b) helical means having a plurality of convolutions along its length to retain articles to be dispensed in the convolutions,
(c) drive means connected to the helical means to rotate said helical means in predetermined increments upon activation by a customer, and
(d) adjustable divider means positioned within the helical means and having elements movable laterally toward the tray side walls to change the spacing between the divider means and the tray side walls to compensate for articles of different width in the convolutions of the helix.

4,363,423

DIAPHRAGM DISPENSER

Richard R. Larsen, Daytona Beach, Fla., assignor to Pacific Scientific Company, Anaheim, Calif.

Continuation of Ser. No. 45,537, Jun. 1, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 225,923
Int. Cl.[3] B65G *59/10*
U.S. Cl. 221—82 3 Claims



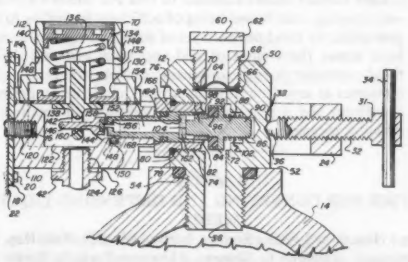
1. A device for separating thin nested objects each having a central aperture therein and one or more ripples on the surface thereof comprising means having grooves formed by threads provided thereon, said thread means being received through said apertures in said objects, and means for rotating said thread means, said thread means being oriented at an upward angle with respect to the horizontal resulting in the individual axis of each of said nested objects becoming noncolinear as said thread means is rotated causing said ripples on each of said objects to move relatively radially with respect to said ripples on adjacent objects, said relative radial movement of said ripples resulting in said objects becoming individually sufficiently separated from their nested configuration to cause said objects to be received in said grooves as said thread means is rotated.

4,363,424

QUICK COUPLING DEVICE FOR A GAS PRESSURIZATION SYSTEM

Clair D. Holben, Denver, Colo., and Edward L. Jeans, Spartanburg, S.C., assignors to Cadbury Schweppes PCL, London, England

Filed Oct. 23, 1980, Ser. No. 200,020
Int. Cl.[3] B67D *1/12*
U.S. Cl. 222—4 23 Claims



1. A regulated gas pressurization system for providing a continuous supply of gas at a predetermined pressure from a source of high pressure gas stored in a pressurized cylinder, said system comprising:
(a) a fitting means arranged to be attached to a valve means which is mounted on a storage cylinder providing a gas tight closure for said cylinder,
(b) a pressure regulator means having an outlet port, and

(c) a coupling means which is arranged to quick connect said regulator means and said cylinder fitting means whereby the pressurized gas is allowed to flow from the cylinder through the regulator means and outlet port so as to supply and maintain a predetermined gas pressure,

(d) said coupling means including a connecting boss having a passageway therethrough, a pivotable retaining yoke mounted on said regulator means, and a receiving passageway means which is arranged to slidably receive the connecting boss, said yoke having a retaining means and being pivotable from a raised position, said connecting boss contacting said valve means when slidably moved into said receiving passageway means to automatically open said valve means as said valve means is joined to said pressure regulator means using said retaining means and said passageway of said connecting boss conducting the flow of gas from said valve means to said pressure regulator means.

4,363,425

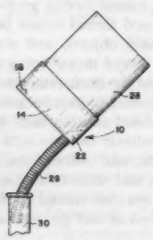
FUNNEL FOR DIESEL OIL CANS

Burt J. Ehrenrich, 110 S. 129th East Ave., Tulsa, Okla. 74128

Filed Feb. 11, 1980, Ser. No. 120,716

Int. Cl.³ B65B *7/28*

U.S. Cl. 222—85 **1 Claim**



1. An apparatus for opening a fluid-filled cylindrical container of one gallon size or larger and pouring said fluid therefrom being comprised of:

a circular cylindrical member slightly larger than said container, said member closed at one end to define an inner surface to be placed over said fluid-filled container;

A container opening means disposed on said inner surface of the end of said member;

an opening through said end cooperable with said container opening means;

a flexible tubular funnel attached to said end thereof around said opening, said funnel being of sufficient flexibility to be positioned by hand pressure yet of sufficient rigidity to not bend under the weight of said apparatus and said fluid-filled container thereby supporting said apparatus and said container at any desired angle while fluid is being poured therefrom and a piercing means opposite said container opening means.

4,363,426

DEVICE FOR CONVEYING AND DISPENSING LIQUID MEDIA

Alfred Heinzl, and Heinz Stadler, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

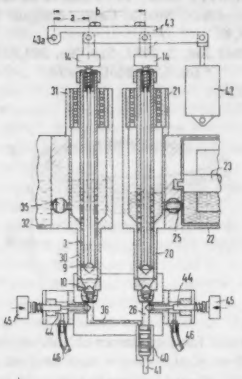
Filed Oct. 6, 1980, Ser. No. 194,335

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945283

Int. Cl.³ B67D *5/46, 5/52*

U.S. Cl. 222—134 **10 Claims**

1. A device for conveying and dispensing liquid media containing a granulated filler comprising at least one piston pump having a cylinder chamber and a tubular piston slidably received therein such that an annular gap exists between said cylinder chamber and said piston, said gap being larger than the average size of the particles of said granulated filler, said cylinder chamber having a widened upper portion forming an annular feed zone and having an input opening at a side thereof communicating with a feed container for receiving said liquid media from said feed container and having an output opening for dispensing said liquid media, said piston having a plurality



of wall perforations in the region of said input opening for admitting said liquid media to the interior of said piston, and said piston further having an open lower end in the region of said output opening, and an inlet valve for opening and closing said lower end of said piston for admitting said liquid media from the interior of said piston to said output opening, whereby said piston is continuously completely surrounded by said liquid media and is sealed thereby.

4,363,427

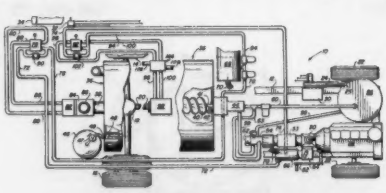
ASPHALT DISPENSER VEHICLE

Gaius P. Crosby, Mesa, Ariz., assignor to Crafco, Inc., Chandler, Ariz.

Filed Jun. 6, 1980, Ser. No. 157,040

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146 H **10 Claims**



1. A specialized vehicle for movement in a path alongside a plurality of containers for dispensing liquified molten asphalt from the vehicle into the containers, said vehicle comprising:

(a) a frame having a front and a back;

(b) drive wheels mounted at the back of said frame;

(c) first motor means coupled to said drive wheels for driving thereof;

(d) first control means coupled to said first motor means for variable speed operation thereof in selectively opposite directions;

(e) a materials tank mounted on said frame for receiving liquified molten asphalt;

(f) an asphalt delivery pump connected to said materials tank

at the back of said frame for dispensing liquified molten asphalt from said tank;

(g) second motor means coupled to said asphalt delivery pump for operation thereof;

(h) second control means coupled to said second motor means for variable speed operation thereof in selectively opposite directions;

(i) an engine means mounted on said frame;

(j) power supply means driven by said engine for producing power which is coupled through said first and said second control means to operate said first and said second motor means;

(k) an operator's seat located at the back corner of said frame; and

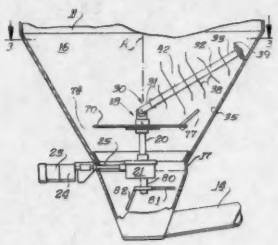
(l) said first and said second control means mounted on said frame adjacent said operator's seat.

4,363,428

BULK BIN FEED DELIVERY APPARATUS

Joseph A. Kruger, Warsaw, Ind., assignor to Brock Manufacturing, Inc., Milford, Ind.

Filed Sep. 4, 1980, Ser. No. 184,131
Int. Cl.³ B65G *65/48*
U.S. Cl. 222—227 **22 Claims**



1. Apparatus for positively delivering a steady flow of feed from a bin through a concially sided bin exhaust, comprising, in combination, first rotatable shaft means, second rotatable shaft means connected to the first shaft means so as to be driven by the first shaft means, and a plurality of separated polygonal disc members mounted on and extending from the second shaft means for engaging packed feed and dislodging the packed feed, whereby to permit the dislodged feed to fall downwardly through the bin exhaust, the second rotatable shaft means comprising an inner non-circular shaft element, and at least one outer non-circular shaft element adapted to slip over the inner shaft element and space apart adjacent polygonal disc members.

4,363,429

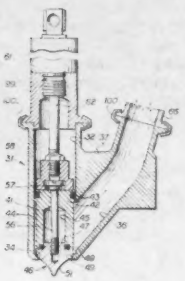
POUCH FILLER NOZZLE AND VALVE

Peter V. Schindler, Northridge, Calif., assignor to Angelus Sanitary Can Machine Company, Los Angeles, Calif.

Filed Jul. 18, 1980, Ser. No. 170,000
Int. Cl.³ B67D *5/37*; F16K *23/00*
U.S. Cl. 222—504 **3 Claims**

1. A nozzle and valve construction for filling product into containers comprising,

a body having a cylindrical bore extending vertically of said body, said body being formed with a reduced diameter seat at its lower end, said seat being formed with a taper converging downwardly-inwardly in a conical shape, said body being formed with a side port for product slanting downwardly-inwardly and opening into said bore to one side of said body and in close proximity to said seat, a piston reciprocable in said bore from an open position substantially above said port to a closed position, said piston having a cylindrical, reduced diameter portion slightly smaller than said bore extending upward from its lower end to adjacent the top of said piston, and having an enlarged diameter portion in sliding-sealing engagement with said bore above said reduced diameter portion, said piston having a tip formed with a concve conoidal shaped lower portion merging with an upwardly-outwardly curved seating portion having a maximum diameter equal to said reduced diameter portion so that in cross-section said reduced diameter portion, said curved seating portion and said lower portion form a continuous S-curved shape,



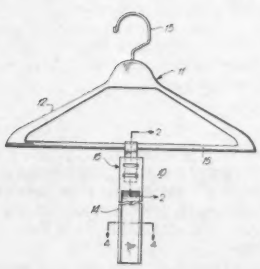
said tip terminating in a rounded lower end, there being approximately a 90° angle between two lines in a vertical plane through the axis of said piston, said lines interconnecting said lower end and said curved seating portion, said seating portion engaging said seat in closed position of said piston, and means to reciprocate said piston, the shape of said tip preventing drip of product after said valve is closed, whereby product is drawn upward along said S-shaped curve by surface tension of said product.

4,363,430

ANTITHEFT GARMENT HANGER AND DEVICE

Alexander Radlin, 1770 Parent Ave., Windsor, Ontario, Canada (N8X 4K1)

Filed Oct. 9, 1979, Ser. No. 82,791
Claims priority, application Canada, Aug. 24, 1979, 334404
Int. Cl.³ A47J *51/082, 51/097, 51/142*
U.S. Cl. 223—88 **13 Claims**



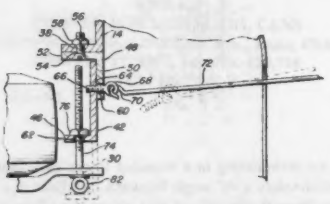
1. An antitheft garment hanger comprising:

a body portion having a pair of rigid arms oppositely directed and adapted to suspend a garment, said arms having each a free end, a cross member joining the free ends of the arms, means disposed intermediate the free ends of the arms for suspending the body portion, and

a single substantially rigid and inflexible bar having one end swingably attached to the cross member intermediate the free ends of the arms and depending downwardly therefrom, said bar having a smooth non-supportive regular surface to prevent snagging the garment and a length

substantially greater than the distance separating the free ends of the arms to prevent rolling up the hanger and garment into a small size preparatory to theft thereof, wherein said bar is swingably attached to the cross member by means of a latch, said latch having thin sidewalls defining a split cylindrical clasping portion adapted to swingably attach to said cross member and a tab portion extending outwardly from each split end of the clasping portion for fixed attachment to an end of said bar.

4,363,431
PICKUP TRUCK SPARE TIRE RACK
Ben E. Muschalek, Box 198, McCamey, Tex. 79752
Filed May 12, 1981, Ser. No. 263,345
Int. Cl.³ B62D *43/04*
U.S. Cl. 224—42.23 **8 Claims**

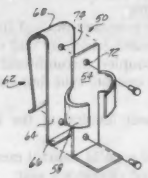


1. In combination with a vehicle chassis including rear opposite side portions, an elongated horizontal tire support member having first and second ends, each end of said support member having upstanding bores formed therethrough, an upstanding bolt passing loosely upwardly through each of said bores and including a threaded upper end, one of said threaded upper ends being removably threadingly supported from one of said side portions, the lower ends of said bolts including enlarged abutments upwardly abuttingly engaged with downwardly facing surfaces of said ends of said support member, the other side portion including first upright flange disposed transverse to said support member and having a generally horizontal smooth bore formed therethrough generally paralleling said tire support member, a mounting member, the other threaded upper end being threadedly supported from said mounting member, said mounting member including a second upstanding flange generally paralleling and disposed closely inwardly of said first flange, said second flange having a threaded horizontal bore formed therein registered with said smooth bore, and a threaded fastener shank passed through said smooth bore from the outside of said first flange and removably threaded in said threaded bore.

4,363,432
CIGARETTE LIGHTER SUPPORT
William H. Warthen, 5050 W. Harvard, Clarkston, Mich. 48016
Filed Nov. 18, 1980, Ser. No. 207,978
Int. Cl.³ A45F *5/02*
U.S. Cl. 224—247 **2 Claims**

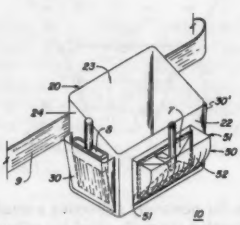
1. A cigarette lighter support for securing the lighter to an article of apparel comprising:
- a vertical wall abutting the lighter;
- a bottom wall to support the lighter bottom integral with and extending forward from the vertical wall, said bottom wall narrower than said lighter bottom allowing said lighter bottom to project beyond said bottom wall a pair of opposed arcuate arms extending transversely from and integral with the vertical wall, said arms curving forward then inward to snugly embrace the lighter;
- a horizontal planar flange integral with and extending forward from one of said arms;
- a garment engaging clip formed from an upward extension of the vertical wall curving arcuately rearward then downward then downward and inward toward the vertical wall, terminating proximate the vertical wall;

the lighter snugly insertable between the arcuate arms with the lighter bottom resting on the bottom wall; and



wherein the lighter is removable from the support with one hand with the user's thumb pressing downward on said horizontal flange and the user's forefinger pressing upward on the lighter bottom.

4,363,433
PAINTER'S HOLSTER
Dean Jaques, P.O. Box 19, Burns, Oreg. 97720
Filed Mar. 31, 1978, Ser. No. 892,374
Int. Cl.³ B44D *3/00*
U.S. Cl. 224—253 **4 Claims**

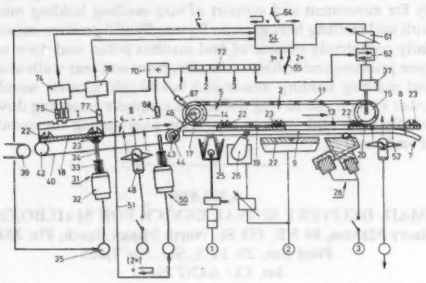


1. An improved painter's holster comprising:
- a rigid, substantially rectangular paint reservoir having a substantially planar bottom wall, side walls and front and rear walls, each sealingly connected to one another, and having a top opening downwardly declining from said rear wall to said front wall;
- at least two loop members attached to the exterior rearwardmost planar surface of said rear wall, horizontally spaced from one another adjacent the top of said rear wall and operable to slidingly engage a belt; and
- a brush holding means sealingly engaging the exterior planar surface of one of said side walls, said brush holding means including a pair of planar, triangular side portions and a rectangular end portion sealingly connected thereto to define a substantially V-shaped enclosure having a top opening below the level of the top opening of said paint reservoir for receiving a conventional paint brush.

4,363,434
CONTINUOUS SOLDERING INSTALLATION
Karl Flury, Bergstr. 61, 8953 Dietikon, Switzerland
Filed Jan. 22, 1980, Ser. No. 114,152
Claims priority, application Switzerland, Jan. 23, 1979, 642/79
Int. Cl.³ H05K *03/34;* B23K *03/00*
U.S. Cl. 228—7 **4 Claims**

1. A continuous soldering installation particularly for the soldering of printed circuit boards, said installation comprising: a soldering machine that includes support means for carrying frames adapted to carry printed circuit boards along a path

of travel from a front input end of said support means to a rear output end of said support means, means associated with said support means near the front input end for fluxing printed circuit boards, means associated with said support means for preheating a fluxed printed circuit board and means associated with said support means for soldering fluxed and preheated printed circuit boards; a feeder mechanism for transporting frames that are adapted to carry the printed circuit boards; said mechanism disposed at the front input end of the support means, having at least the length of two frames and being equipped with at least one programmable sub mechanism operatively associated with the feeder mechanism for holding the frame at a holding station; a program controlled trigger mechanism associated with the feeder mechanism and operated by the sub mechanism to release the frame for movement by the feeder mechanism to the soldering machine; a discharge device disposed at the rear output end of the support means; a transfer device traversing the support means for moving frame



therethrough; a program controlled variable speed reversible electric motor, which drives at least the transfer device, and which for selective operation of the installation can function in continuous throughput fashion or in a back-and-forth operation; switchboards associated with said installation with relatively operable switches and adjustable regulators for changing soldering parameters and selecting operational modes for said installation; said modes including a simple through processing mode and a back-and-forth processing mode; said soldering parameters including operation levels of said fluxing means and said preheating means, and speed of said soldering means; frames adapted to carry printed circuit boards, each of said frames equipped with a code bearing strip; said feeder mechanism at a front end thereof being equipped with a reading device which reads the code on said strip, said reading device transmitting said code to a program control station, said program control station matching said code with an appropriate routine for processing a printed circuit board attached to said read frame.

4,363,435

METHOD FOR PRODUCING A TUBE FOR A CRACKING PLANT

Johannus J. Broodman, Breskens, Netherlands, assignor to B.V. Koninklijke Maatschappij "De Schelde", Vlissingen, Netherlands

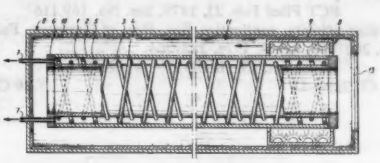
Filed Mar. 3, 1980, Ser. No. 126,205

Claims priority, application Netherlands, Mar. 2, 1979, 7901691

Int. Cl.³ B23K *20/14*

U.S. Cl. 228—131 **8 Claims**

1. A method for producing a tube for a cracking plant which comprises the steps of providing an inner tube consisting of a material capable of withstanding an excessive interior pressure and an excessive internal temperature within the inner tube; placing a reinforcement about said inner tube, said reinforcement being provided with a plurality of openings, holes or passages arranged between the reinforcement parts and consisting of a material capable of withstanding excessive compressive and tensile forces acting on the tube; placing an outer tube about said reinforcement, said outer tube consisting of a material capable of withstanding both an excessive pressure and an excessive temperature that may prevail outside the outer tube; exerting a pressure of such a magnitude on the inner



surface of the inner and on the outer surface of the outer tube in a pressure furnace and furthermore heating these tubes to such a high temperature that the limit of stretching strain of the tube materials is surpassed, whereby the two tubes are bonded together by pressure or fusion welding in the openings or passages between the reinforcement parts.

4,363,436

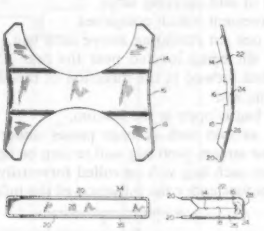
METHOD OF MAKING MUFFLER CLAMPS

Ralph K. Evans, Plantsville, and Roy S. Florian, Southington, both of Conn., assignors to Nickson Industries, Inc., Plainville, Conn.

Division of Ser. No. 25,340, Mar. 30, 1979, Pat. No. 4,270,251. This application Nov. 5, 1980, Ser. No. 204,484

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—144 **5 Claims**



1. A method of manufacturing a saddle member for a saddle clamp comprising the steps of;

a. folding an integral sheet-metal blank having opposite first edges and second edges extending between said first edges, said folding being along lines extending along and adjacent said second edges to form upstanding flange portionsk extending over at least a major portion of the length thereof;

b. folding said blank between said second edges along a pair of parallel lines extending transversely thereof to form a generally U-shaped portion provided by a pair of spaced-apart, generally parallel side wall portions and a base portion extending therebetween, said flange portions thereby providing oppositely extending side-wall flange regions on the side margins of said side wall portions extending over at least a major portion of the vertical length thereof and base flange regions extending from said base portion toward said side-wall flange regions; and

c. welding said side-wall flange regions together at said second edges thereon and said base flange regions to said side-wall flange regions, thereby forming end wall portions of the saddle member that include said side-wall flange regions and said base flange regions of said flange portions and that form a continuous surface with said side wall portions and said base portion.

4,363,437

WEB OF BAGS

Wilhelm Scherz, Bergwerkstr. 5, D 7180 Crailsheim, Fed. Rep. of Germany

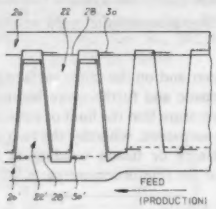
PCT No. PCT/DE79/00021, § 371 Date Oct. 10, 1979, § 102(e) Date Oct. 10, 1979, PCT Pub. No. WO79/00655, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 22, 1979, Ser. No. 169,116

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807590; Jul. 4, 1978, 2829364

Int. Cl.[3] B65D *27/10, 30/00*

U.S. Cl. 229—53 16 Claims



1. In a web of bags comprising

(a) an elongated continuous carrying strip,

(b) a plurality of parallel spaced apart consecutive bags suspended therefrom, each bag having an upper opening, and

(c) a plurality of spaced apart slits located above the upper openings of said bags, said slits extending along a line which is parallel to the longitudinal direction of movement of said carrying strip,

the improvement which comprises

only one slit extending above each bag,

each slit being located near the rear edge of each bag when viewed in the direction of travel of the carrying strip, and

each bag is open at the bottom,

whereby, as said web of bags passes under a downwardly directed air stream each bag will in turn be opened by said air stream and each bag will be rolled forwardly about its axis a limited amount under the influence of the inflating air stream.

4,363,438

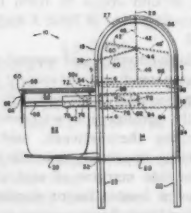
MAIL BOX

Charlie Connor, Roxbury, Boston, Mass. 02119

Filed Jul. 7, 1980, Ser. No. 166,398

Int. Cl.[3] B65D *91/00*

U.S. Cl. 232—30 4 Claims



1. In a mail box a pair of side walls with substantially semicircular upper ends, straight bottom ends and vertical forward and rear edges; a bottom wall extending horizontally between the bottom edge portions of the side walls; a rear wall extending vertically up between the rear edge portions of the side walls and a top wall extending from the rear wall upwardly and forwardly along the semicircular ends of the side walls and terminating slightly forward of a plane passing vertically through the center of said semicircular upper ends, a door pivoted at the forward edge of said bottom wall and extending upwardly between the front edges of the side walls to the bottom edge of a front wall between forward edge portions of the side walls; a top wall front portion extending rearwardly from the top edge of the front wall at an upward inclination and terminating below and rearwardly of the forward edge of the top wall, a normally vertical closure member pivoted at the rear edge of the top wall front portion and having an upper and lower sections forming a mail receiving chute, said upper section being of a width to extend from one side wall to the other; horizontally disposed slide means inside said mail box at each of said side walls; mailbag holding means comprised of a rigid frame carried by and between the respective ones of said slide means and having an opening for receiving the upper portion of a mailbag and adapted for removeably holding said mailbag in open position in said opening and beneath said closure member lower section, said slide means having capacity for movement and support of said mailbag holding means with said mailbag held thereon forwardly to a position substantially completely outside of said mailbox when said door is in open position; and baffles at the side, front and rear walls above said mailbag holding means and below said closure member lower section and having deflection members extending downwardly from said walls to a position overlapping the opening of said mailbag.

4,363,439

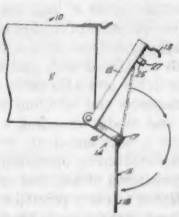
MAIL DELIVERY SIGNAL DEVICE FOR MAILBOXES

Harry Manian, 84 NE. 151 St., North Miami Beach, Fla. 33162

Filed Jan. 29, 1979, Ser. No. 7,465

Int. Cl.[3] A47G *29/12*

U.S. Cl. 232—35 4 Claims



1. In a mailbox the combination comprising a horizontally-extending housing, an opening at one end of the housing for the placement of mail endwise therein, a closure door hingingly journalled to the housing along the lower end of the housing opening and swingable vertically upwardly against said opening for normally maintaining the housing opening in closed condition, an elongated mail delivery signal arm member, and means for hingingly journalling one end of said signal arm member with respect to a lower front portion of said closure door so as to be swingable between upper and lower positions of rest, the relative positions of said closure door when closed and the journalling axis of said signal arm member journalling means being such that the free end of said signal arm member gravitationally abuts the front of said closure door when said arm member is in its upper position of rest, whereby, upon the downward swinging opening motion of the closure door for the insertion of mail through said opening, the surface portion of said door against which the free end of said signal arm member abuts will be brought to a position forwardly of the vertical plane defined by said signal arm member journalling axis so as to cause said signal arm member to fall automatically to said lower position of rest, and said journalling axis of said signal arm member journalling means further being so inclined as to define an angle with the journalling axis of said closure door, whereby said signal arm member, when in its lower

position of rest, projects angularly downwardly and outwardly to one side beyond the outer periphery of said housing when viewed from behind said housing.

4,363,440

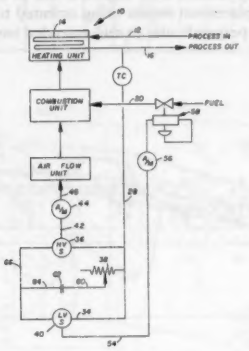
COMBUSTION CONTROL SYSTEM

George C. Broach, Tulsa, Okla., assignor to The G. C. Broach Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 40,946, May 21, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 231,964

Int. Cl.³ F23N *1/08, 5/00*

U.S. Cl. 236—20 R **3 Claims**



1. A combustion control apparatus, comprising:

a signal generating device adaptable to generate a signal from a condition of a process, the signal generating device coupled in parallel to a resistance, a first electro-responsive device, and a second electro-responsive device,

the first electro-responsive device adapted to be responsive to a signal of a first characterization,

the second electro-responsive device adapted to be responsive to a signal of a second characterization,

the resistance coupled to a first plate of a capacitance, the capacitance adaptable to provide a signal of a first characterization and a signal of a second characterization,

a second plate of the capacitance coupled in parallel to the first electro-responsive device and to the second electro-responsive device.

the first electro-responsive device being further coupled to an air control device adaptable to control a flow of combustion air in response to a signal from the first electro-responsive device, and

the second electro-responsive device being further coupled to a fuel control device adaptable to control a flow of fuel in response to a signal from the second electro-responsive device.

4,363,441

THERMAL ENERGY USAGE METER FOR MULTIPLE UNIT BUILDING

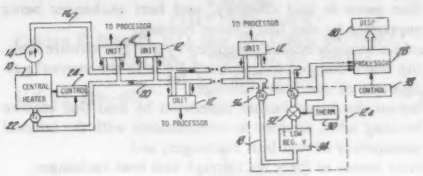
Emanuel Feinberg, 24316 Martha Washington, Southfield, Mich. 48076

Filed Apr. 23, 1980, Ser. No. 142,937

Int. Cl.³ G01K *17/00;* **G05D** *23/00*

U.S. Cl. 236—36 **7 Claims**

1. A system for measuring the thermal energy dissipated in each of a plurality of units, each having a separate fluid circulating circuit served from a common pressurized main, comprising: thermostatically controlled electric shut-off valves disposed in each fluid circuit; an automatic constant flow regulating orifice in each fluid circuit; means for generating electrical signals representative of the inlet and outlet temperatures of the fluid medium in each circuit; and a digital computer connected to each of the shut-off valves and operative to receive the electric signals representative of the inlet and outlet fluid temperatures from each circuit, the computer being programmed to successively scan the outputs of the thermostatically controlled shut-off valves and temperature sensors associated with each unit and operative to generate a plurality of signals, one for each circuit, each representative of the integral of the difference between the inlet and outlet temperatures for that circuit over the time period that the flow control valve for that circuit is open.



4,363,442

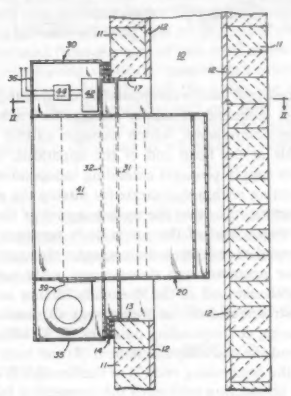
HEATER USING HOT WASTE FLUE GASES

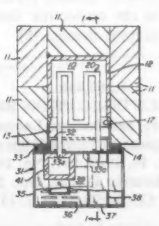
Larry J. Condon, 307 E. End Ave., Pittsburgh, Pa. 15221

Filed Oct. 22, 1980, Ser. No. 199,580

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **9 Claims**





1. Apparatus to heat a forced-air supply with hot waste gases while conducted by a chimney having a side wall with an opening for access to the stream of flue gases, the combination including:

a frame supported by the side wall of said chimney to surround said opening therein,

a flue closure housing supported by said frame to form a

gas-tight enclosure for the opening in the side wall of said chimney,

a heat exchanger having walls forming an internal passageway to conduct air along a path transverse to the stream of flue gases in said chimney, said heat exchanger being supported by said flue closure housing,

a cold-air supply header supported by said flue closure housing while coupled to communicate with the internal passageway of said heat exchanger,

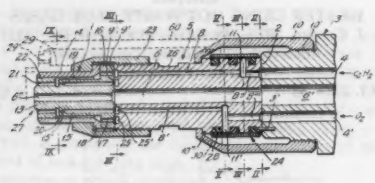
a hot-air discharge header supported by said flue closure housing while coupled to communicate with the internal passageway of said heat exchanger, and

blower means to force air through said heat exchanger.

4,363,443
GAS-TORCH CONSTRUCTION

Erwin D. Huehne, Schallstadt, Fed. Rep. of Germany, assignor to Eutectic Corporation, Flushing, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,132
Int. Cl.³ B05B 7/20
U.S. Cl. 239—79 **19 Claims**



1. Backfire-resistant gas-torch apparatus, comprising a torch body having an independent supply passage for each of two combustible-gas components, which passages extend to a replaceable nozzle at the head end of the apparatus, with the gas-components supply passages extending independently into and interconnecting within the nozzle for mixing the gas components, characterized in that the upstream end of the nozzle and the downstream end of the torch body terminate in flat radial planes, and that an intermediate adapter element (5) with flat radial-plane upstream and downstream ends is coupled between the upstream end of the internally mixing nozzle (1) and the downstream end of the torch body (3), said adapter element (5) having corresponding passages (8, 8') which independently extend via said adapter element (5) and interconnect the orifices of the connecting end (7) of the nozzle (1) with the corresponding connecting orifices of the connecting face (2) of the torch body (3), and fastening means removably securing the nozzle (1) and the adapter element (5) to each other and to the torch body (3) via the respective flat downstream and upstream ends of the adapter element (5).

4,363,444
MOBILE IRRIGATION BAR

Paul Dejoie, Labouheyre, and Bernard Lamarque, Montesquieu, both of France, assignors to Perrot-France, Paris, France

Filed Oct. 14, 1980, Ser. No. 196,450
Claims priority, application France, Oct. 23, 1979, 79 26290
Int. Cl.³ B05B 3/02, 3/18
U.S. Cl. 239—177 **7 Claims**

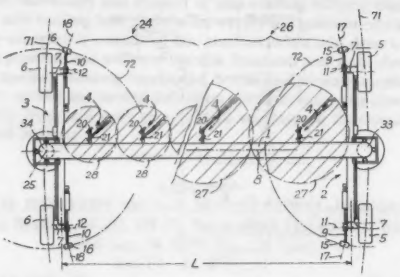
1. A mobile irrigation bar displaceable on a ground surface, said mobile irrigation bar having at least one inlet section being coupled to a water supply and at least one outlet section for passage of fluid external of said mobile irrigation bar, comprising:

first connector means for coupling said bar to said water supply, said bar having a pair of opposing ends, said first connector means being located at a first end of said bar;

second connector means for coupling said bar to said water supply, said second connector means being located at a second end of said bar;

first displacement means for supporting and displacing said bar on said ground surface, said first displacement means being located near said second end of said bar, said first displacement means being oriented to follow an initial path perpendicular to an extended length between said first and second ends of said bar for displacement of said second end of said bar along a circumference having a center constituted by said first connector means;

second displacement means for supporting and displacing said bar on said ground surface, said second displacement means being located near said first end of said bar, said second displacement means being oriented to follow said initial path perpendicular to said extended length between



said first and second ends of said bar for displacement of said first end of said bar along a circumference having a center constituted by said second connector means;

first and second auxiliary displacement means for supporting and displacing said bar on said ground surface, said first and second auxiliary displacement means being respectively located near said second and first ends of said bar, said first and second auxiliary displacement means being oriented to follow paths which are substantially perpendicular to said paths of said first and second displacement means respectively; and,

means for selective actuation of (1) said first displacement means and said second auxiliary displacement means, and (2) said second displacement means and said first auxiliary means.

4,363,445
THRUST-VECTORING NOZZLE FOR JET PROPULSION SYSTEM

Jean G. Bouiller, Brunoy; Jacques A. J. Pous, Le Mee sur Seine, and Raymond J. M. Joubert, Savigny sur Orge, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Nov. 24, 1980, Ser. No. 209,986
Claims priority, application France, Nov. 23, 1979, 79 29208
Int. Cl.³ B64C 15/06
U.S. Cl. 239—265.35 **11 Claims**

1. A thrust-vectoring nozzle for a jet propulsion system comprising:

a first fixed part connected with the propulsion system;

a second pivoting part pivotably mounted on said fixed part;

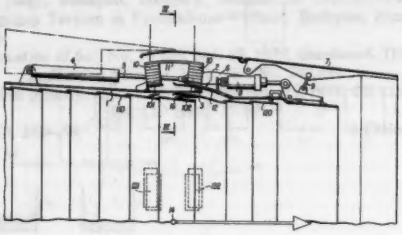
an intermediate connecting ring;

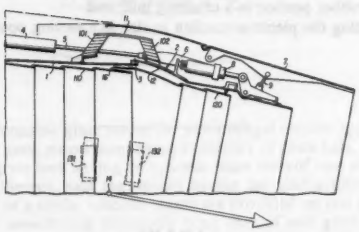
tightening means arranged between the fixed part and the pivoting part;

at least one control jack for moving the pivoting part operably associated therewith; and

a multidirectional steering device comprising separated elastic elements arranged between the fixed part and the pivoting part of the nozzle, each elastic element further comprising two essentially parallel extended ends, the

multidirectional steering device further comprising at least three sets wherein each set comprises two of said elements, uniformly distributed at the periphery of the nozzle, one of the ends of the elastic elements being integral with said intermediate connecting ring independent of the fixed part and pivoting part, the other end of each of the two elements being affixed on the fixed part and the pivoting part, respectively, of the nozzle.





4,363,446

FUEL INJECTION NOZZLE

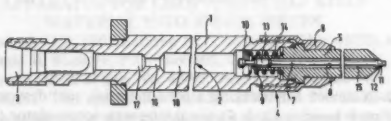
Günther Jäggle, Stuttgart; Ernst Lang, Gerlingen, and Heinrich Knapp, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,143

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005857

Int. Cl.³ F02M *61/08*

U.S. Cl. 239—453 2 Claims



1. In a fuel injection nozzle for an internal combustion engine, having a nozzle holder defining an inner longitudinal bore through which fuel flows under pressure, one end of said longitudinal bore including a fuel inlet; and a valve group connected to the nozzle holder at the other end of the longitudinal bore, said valve group including a nozzle body and a valve needle which opens outwardly of the injection nozzle, the improvement wherein:

(i) the inner longitudinal bore includes three sections, one of which has a cross sectional area greatly reduced relative to the cross sectional area of the other two sections, said section of greatly reduced cross sectional area being situated between the other two sections and thus decoupling the other two sections from one another, so that pressure oscillations in either of said other two sections are substantially confined to that section; and

(ii) the ratio of the cross sectional areas of the three sections is approximately 7:4:10.

4,363,447

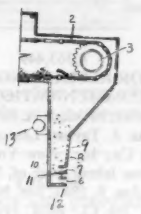
CHIP SPREADER

Clayton E. Schulze, P.O. Box 135, Corry, Pa. 16407

Filed Oct. 1, 1980, Ser. No. 192,847

Int. Cl.³ A01C *15/00*

U.S. Cl. 239—659 7 Claims



1. In a spreader for granular material, means for holding a mass of flowable granular material including a stationary bottom wall for supporting said mass, a lateral discharge nozzle having its leading end receiving material from a lower part of said mass and conducting the same to an outlet, an unobstructed discharge grille crosswise to the direction of flow between said inlet and outlet, said grille having its leading side in contact with a lower part of said mass and subject to the gravity head from the part of said mass above said lower part, said grille having vertically spaced bars oriented crosswise of the direction of flow through the grille, the width of the bars being such that the material will not flow through the grille under static conditions but will flow through the grille when the material is subjected to vibration by vibration means.

4,363,448

MILLING OF CEREALS AND THE LIKE

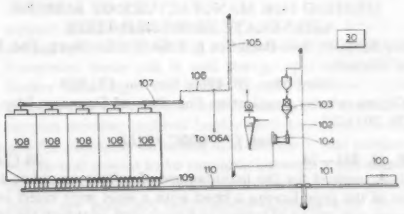
Ernst Mächler, Zuzwil, and Emanuel Kummer, Gossau, both of Switzerland, assignors to Gebrüder Bühler AG, Uzwil, Switzerland

Filed Dec. 26, 1979, Ser. No. 106,939

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855715

Int. Cl.³ B02C *9/04*

U.S. Cl. 241—10 30 Claims



1. An improved method of operating a cereal or grain milling plant having a plurality of processing zones selected from cleaning, roller milling, moistening, sifting or silo storage for the production of a milled product to a given specification such as flour, semolina and ground flour from initial cereal or grain having given characteristics wherein at least some of said zones have a plurality of sensors arranged to give output values in response to operating conditions of said zones of said plant

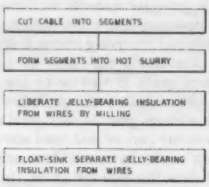
the improved method comprising the steps of; optimally processing a plurality of types of grains and storing in a control device the output values from said sensors in association with the characteristics of the type of grain and the specification of the finished product during each of said optimal processings; selecting one of said optimal processes to be performed on an incoming cereal or grain to be milled having regard to the type of grain and of the finished product to be produced from it; associating each of the stored outputs of said sensors with said selected process in order to obtain a desired series of operating conditions; outputting from said control device a plurality of signals to control operating conditions in each of said zones so that said sensors read in accordance with said desired series of operating conditions.

4,363,449

PROCESS FOR RECLAIMING JELLY-FILLED TELECOMMUNICATION CABLES

Susan H. Carr, Mercer; Monique A. Schobert, Hunterdon, both of N.J., and John J. Taylor, Lexington, S.C., assignors to Western Electric Co., Inc., New York and Nassau Recycle Corporation, Staten Island, both of, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,438
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—21 **7 Claims**


CUT CABLE INTO SEGMENTS
FORM SEGMENTS INTO HOT SLURRY
LIBERATE JELLY-BEARING INSULATION FROM WIRES BY MILLING
FLOAT-SINK SEPARATE JELLY-BEARING INSULATION FROM WIRES

1. A process for reclaiming a jelly-filled telecommunication cable comprising the steps of:

(a) cutting the cable into segments of jelly-bearing insulated wires;

(b) forming a slurry of the segments heated to a temperature sufficient to soften the jelly;

(c) milling the slurry in a manner so as to shear and thereby liberate insulation from the wires with a substantial portion of the softened jelly adhering to the liberated insulation; and

(d) separating the jelly-bearing liberated insulation from the wires.

4,363,450

METHOD FOR MANUFACTURE OF RUBBER GRANULATE FROM OLD TIRES

Peter Schmidt, Seb.-Bach-Str. 6, 8264 Waldkraiburg, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 131,909
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911251
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—24 **24 Claims**

1. A method for the manufacture of rubber granulate from tires of the type having a bead with a steel wire insert and a carcass comprised of rubber and steel cord, in which the tire is disintegrated into pieces in sequential cutting operations, the pieces are torn by stretching, and the rubber is separated from the steel wire of the carcass, said method comprising:

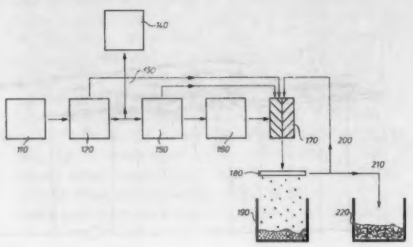
pressing side-wall parts of the tire against each other;

removing a marginal strip from the tire containing the bead and steel wire insert;

cutting the remaining portion of the tire in a first cutting operation into strips extending along its perimeter;

rejecting bead strips which contain a steel cord;

cutting through at least strips which extend substantially in the direction of the tire perimeter and contain textile fibres in a second cutting operation in a direction which is oblique to the direction of cutting during the first cutting operation;



separating from all cut up tire pieces of the carcass the rubber portion in a crushing mill; and

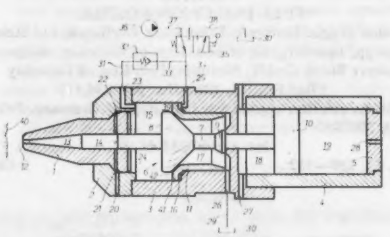
sorting the pieces according to size in a sieving operation.

4,363,451

DEVICE FOR BREAKING A HARD MATERIAL

Barry E. Edney, Servion, and Alain Zurcher, Pampigny, both of Switzerland

Filed Oct. 23, 1980, Ser. No. 199,937
Claims priority, application Sweden, Oct. 23, 1979, 7908750
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—39 **5 Claims**



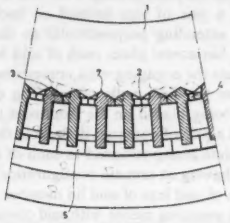
1. A device for breaking a hard material, said device comprising a housing (2, 3, 4), a gas pressure accumulator (19) in said housing, a piston device (6) reciprocably movable in said housing and a valve means (11), characterized thereby that said piston device (6) comprises a first piston (8) being situated between a first chamber (15) and a second chamber (17) in said housing (2, 3, 4) and a second piston (10) acting as a movable end wall of said gas pressure accumulator (19), said valve means (11) being movable between a closed position in which it cooperates with said first piston (8) to prevent pressurized liquid from flowing from said first chamber (15) to said second chamber (17) and an open position establishing a flow communication (39) between said first and second chambers, whereby said first chamber is rapidly depressurized so that the gas pressure in said gas pressure accumulator (19) drives said piston device (6) in a power stroke to cause, directly or indirectly, breakage of the hard material.

4,363,452

CENTRIFUGAL CRUSHER WITH A ROTATING GRATE HAVING GRATE BARS ADAPTING THE GRATE FOR SEPARATING THE GRIT ALSO ACCORDING TO ITS WIDTH

Egon Nagy, Budapest, Hungary, assignor to CHEMIMAS Vegyigep Tervezo es Fovallalkozo Vallalat, Budapest, Hungary

Continuation of Ser. No. 76,836, Sep. 19, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,481
Claims priority, application Hungary, Sep. 25, 1978, CE 1184
Int. Cl.³ B02C *17/02*
U.S. Cl. 241—91 3 Claims



1. A rotatable grate means for a centrifugal crusher apparatus, said grate means comprising a plurality of grate bars, each of said grate bars having on opposite sides thereof cam means formed thereon, said cam means having the configuration of one half of a circle, wherein means are provided on said grate bars for assemblying adjacently lying ones of said grate bars into a continuous cylindrical hollow body forming said grate means, wherein said cam means of said adjacently lying bars form a plurality of apertures, each of said apertures having a predetermined conicity, said conicity having a larger dimension lying in the direction of grit passage through said aperture, and wherein a side of said grate bars lying in the direction of grit passage through said apertures has formed thereon between adjacently lying apertures roof-shaped projections for crushing and for guiding the grit material toward the adjacently-lying apertures, each of said projections running along the substantial length of the bar, wherein said cam means are formed on one side of said bars in a predetermined geometrical relationship with the cam means on the otherside of said bars for allowing a predetermined distribution of the apertures in each row with respect to the apertures in the other row, when said bars are assembled into said grate means.

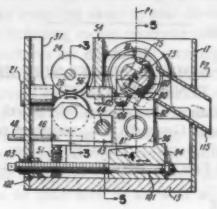
4,363,453

APPARATUS FOR CHOPPING SCRAP STRIP MATERIAL INTO SMALL PIECES

Herbert M. Hill, 5801 Lathrop Pl., Cincinnati, Ohio 45239, and Donald R. Shrader, P.O. Box 301, Oxford, Ohio 45056

Continuation of Ser. No. 4,995, Jan. 22, 1979, Pat. No. 4,230,281. This application Oct. 27, 1980, Ser. No. 201,340
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.³ B02C *13/06, 18/06*
U.S. Cl. 241—222 11 Claims

1. A scrap chopper adapted to receive a narrow strip of scrap metal being fed from a slitting machine, said chopper comprising means for directing the strip along a predetermined path, a first cutting bar having a straight cutting edge, a rotor including a second cutting bar having a straight cutting edge, means supporting said rotor for rotation on an axis to orbit said second cutting bar adjacent said path, means supporting said first cutting bar adjacent said path and with its corresponding said cutting edge having a progressively decreasing radius relative to said axis of rotation and forming an acute angle with respect to both horizontal and vertical reference planes including said axis of rotation, said rotor having means positioning said second cutting bar with its corresponding said cutting edge having a progressively decreasing radius relative to said axis of rotation and forming an acute angle with respect to both horizontal and vertical reference planes including said axis of



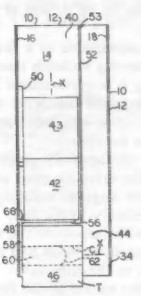
rotation, and said cutting edges being effective to produce scissors-like shearing of the strip in response to rotation of said rotor.

4,363,454

TISSUE ROLL STORAGE AND DISPENSER APPARATUS

Louis Mohar, 5713 N. 72 St., Milwaukee, Wis. 53218

Filed Aug. 21, 1980, Ser. No. 179,972
Int. Cl.³ B65H *19/00, 19/04*
U.S. Cl. 242—55.53 10 Claims



5. Storage and dispenser apparatus for tissue rolls having hollow axial core members comprising:

a cabinet defining a storage space wherein a plurality of tissue rolls can be slidably stored one on top of another with their axes vertical, said cabinet having an opening at the bottom thereof;

a support and dispenser device in said cabinet below said storage space and including a support member on which a lowermost tissue roll in said storage space can rest and further including a roll holder spaced from said support member and on which a tissue roll can be disposed, said support member and roll holder each having a free end;

means for pivotably mounting said device in said cabinet to enable said device to be movable between a roll-dispensing position wherein said support member and said roll holder are generally horizontally disposed with the roll holder beneath the support member and a roll-receiving position wherein said support member and said roll holder are generally vertically disposed with their free ends extending upwardly;

means connected to said device and extending outwardly of said cabinet for selectively moving said device between said roll-dispensing position and said roll-receiving position;

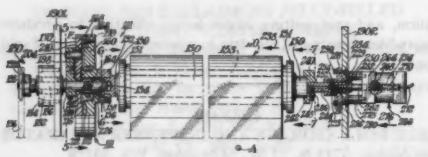
and alignment means in said storage space for aligning the core of the lowermost tissue roll in said storage space with

said roll holder when the latter is in roll-receiving position, said alignment means being movable to enable passage therepast of a tissue roll on said roll holder as the latter moves from roll-receiving position to roll-dispensing position.

4,363,455
TAKE-UP ROLL MANDREL SLIP CLUTCH TENSIONING DEVICE

Matthew A. Del Bianco, Chesapeake Isle, North East, Md., and Henry J. Tancredi, Gwynedd, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,413
Int. Cl.[3] B65H *59/38*
U.S. Cl. 242—75.5 1 Claim



1. A tensioning device for a roll adapted to wrap a web thereupon, the tension imparted to the web being functionally related to the velocity of the roll, the device comprising:

a drive member able to be driven at a first predetermined angular velocity;

a clutch member connectable to a first end of the roll, the clutch member having a clutch material thereon;

means for imposing a predetermined bias force for biasing the clutch member and the drive member into abutting contact along a friction interface between the clutch material and the drive member,

the clutch member continuously slipping along the interface with respect to the drive member as the drive member is driven at the first angular velocity to impart a second lesser, angular velocity to the roll,

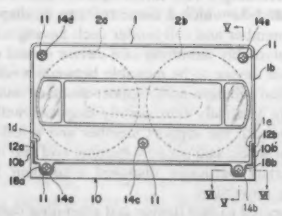
a socket movable with respect to the second end of the roll from a first, engaged, position to a second, released, position with respect to the roll; and

means for biasing the socket to the first, engaged, position.

4,363,456
MAGNETIC RECORDING TAPE CASSETTE

Shinichi Goto, Takatsuki, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Nov. 14, 1980, Ser. No. 206,689
Claims priority, application Japan, Nov. 15, 1979, 54/158928[U]
Int. Cl.[3] G03B *1/04*; G11B *23/04*
U.S. Cl. 242—197 5 Claims

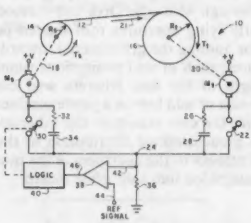


1. A magnetic recording tape cassette which comprises a bottom case half, a top case half mated with said bottom case half to form a cassette case having a front wall with a plurality of openings defined therein, a pair of guide pins provided near the respective front corners of said cassette case, means provided in each of said top case half and bottom case half for receiving screw fastening means for fastening said top case half to said bottom case half, a pair of reels accommodated within said cassette case for receiving a magnetic recording tape, said magnetic recording tape being adapted to be wound about said reels so as to pass along said plurality of openings defined in the front wall of said cassette case and along said pair of guide pins provided near the respective front corners of said cassette case, a protective lid member movably mounted on the front portion of said top case half so as to close or open said openings of said cassette case, said lid member including a horizontal upper plate and a vertical lid plate to form a reverse L configuration in cross-section, a pair of legs formed on each end of said horizontal plate extending perpendicular to the longitudinal direction of said horizontal plate, each of said legs being provided with a means for engaging with corresponding engaging means formed on the side walls of said top case half, said horizontal plate being placed on the frontmost portion of said top case half and a pair of openings defined in the rear edge of said horizontal plate juxtapositioned to each of said legs, each of said openings having an arcuate configuration which allows for the expansion of said legs of said lid member outwardly for engaging said leg engaging means with said corresponding side wall engaging means of said top case half.

4,363,457
WEB TENSIONING SYSTEM

John R. Flint, Barrington; Kenneth L. Hendrikson, Chicago, and K. George Rabindran, Morton Grove, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 4, 1980, Ser. No. 203,934
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—203 1 Claim



1. In a web transport which advances a web from a supply spool to a take-up spool and in which the spools are coupled, respectively, to a supply motor and a take-up motor for advancing the web, a system for holding the tension in the web substantially constant, comprising:

means coupled to both motors for developing an output signal indicative of the sum of the motor currents;

means for generating a reference signal indicative of a value of summed motor currents calculated to create a given tension on the web as the web is collected on the take-up spool;

a comparator receiving the reference signal and the output signal for generating a control signal indicative of differences between the output signal and the reference signal; and

means responsive to the control signal for applying, to the supply motor, current pulses which are width-modulated so as to bring the value of the summed motor currents to within at least a selected range of the reference signal and thereby maintain a substantially constant tension in the web.

4,363,458

AIRFOIL STRUCTURE

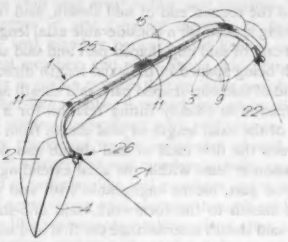
Andrew W. Jones, 16 Saxon Rd., Cambridge CB5 8HS, England, and Raymond Merry, 18 Orkney Close, Haverhill, Suffolk, both of England

Filed Jul. 18, 1980, Ser. No. 170,109

Claims priority, application United Kingdom, Jul. 19, 1979, 25158

Int. Cl.[3] B64C *31/06;* B64D *17/02*

U.S. Cl. 244—153 R 10 Claims



1. An air-inflatable airfoil structure, comprising an elongate container having elongate leading and trailing edge regions, said structure being formed so as to provide an airfoil cross section between the leading and trailing edge regions when the container is inflated, elongate stiffening means connected to the leading edge region to maintain the container in an extended condition, said stiffening means further including at each end an anchorage for one of a pair of control lines for the structure, said stiffening means being constructed so that the deformation characteristics of said stiffening means permit a considerably higher degree of deformation at the end region of said stiffening means than at the central region of the stiffening means, said stiffening means comprising a spar having a substantially rigid center section extending along a substantial portion of the central region of the leading edge of said airfoil structure and serving to keep the central region substantially undeformed during flight of the structure, a connector at either end of said center section, and a substantially deformable end section connected to each said connector.

4,363,459

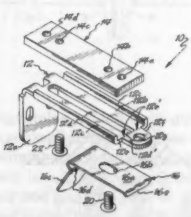
ADJUSTABLE WALL MOUNTED BRACKET

Joseph C. Holzer, Liverpool, N.Y., assignor to Joanna Western Mills Company, Chicago, Ill.

Filed Dec. 5, 1980, Ser. No. 213,397

Int. Cl.[3] A47M *1/10*

U.S. Cl. 248—265 8 Claims



1. A bracket assembly for adjustably mounting a device in spaced relation to a wall, said assembly comprising:

a fixed bracket member having a support portion formed with an elongated slot and a break-away tab extending from an outer end of said support portion and closing one end of said slot, said tab having a mounting aperture;

an adjustable extension arm mounted on said support portion for adjustment lengthwise of said slot, said arm being elongated and having a plurality of mounting apertures spaced apart lengthwise thereof and disposed for vertical alignment with a longitudinal axis of said slot;

a coupling device having a mounting opening therethrough and means for coupling same to said device; and

fastener means including means received within said slot and mounting apertures for releasably securing said arm in all adjusted positions thereof to said support portion and means selectively received within said mounting opening, said slot and said mounting apertures and within said mounting opening. said mounting aperture and said mounting apertures and within said mounting opening and said mounting apertures for selectively securing said coupling device to said arm in all said adjusted positions thereof.

4,363,460

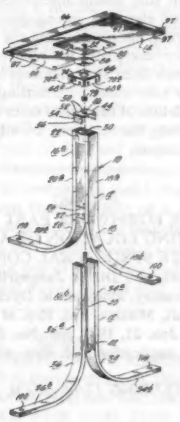
TELEVISION STAND

Joseph W. Carroll, West Chester, Pa., assignor to Kim Manufacturing Company, Downingtown, Pa.

Filed Jan. 2, 1980, Ser. No. 109,146

Int. Cl.[3] F16M *13/00*

U.S. Cl. 248—415 10 Claims

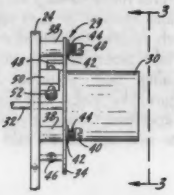


1. A stand assembly comprising a pair of inverted generally T-shaped first and second leg sections, each leg section comprising a pair of hollow members of generally L-shaped configuration consisting of a vertical portion and a horizontal portion defining a pedestal member and a connecting member securing the vertical portions in spaced generally coplanar parallel relation to form a T-shaped leg section, a cap assembly secured to the upper ends of the vertical portion of said first leg section and having means engaging in the open terminal ends said second leg section thereby to align the vertical portions of the leg sections and position the horizontal portion in generally the same plane when the leg sections are interengaged and nested to form a four-legged assembly, a bolt member cooperating with said connecting members and engaging through said closure cap assembly and locking means engageable with the bolt member to secure the leg sections together.

4,363,461
TAPE READER MOTOR MOUNT

George Smejkal, Mt. Prospect, Ill., assignor to Extel Corporation, Northbrook, Ill.

Filed Sep. 2, 1980, Ser. No. 182,968
Int. Cl.³ F16M 1/00
U.S. Cl. 248—655 7 Claims



1. In a motor-driven photoelectric tape reader or like device in which precise angular orientation of the drive motor about its shaft axis is critical to effective operation, a motor mount comprising:

first and second base plates, the drive motor being affixed to one of the base plates;

the first base plate having a plurality of mounting slots therein, each mounting slot being of arcuate configuration symmetrical with respect to an arcuate segment of a given circle;

a corresponding plurality of retainers each engaging the first base plate, extending through one of the mounting slots, and affixed to the second plate;

first and second aligned fixed stop elements, each affixed to a different one of the base plates;

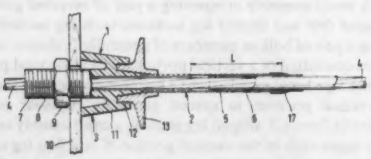
adjustable length stop means interposed between the first and second stop elements, in engagement with both;

and a biasing spring, interconnecting the two base plates and biasing the two base plates for relative rotary movement to maintain both fixed stop elements in engagement with the adjustable stop means, permitting adjustment of the angular orientation of the motor over a continuous range, without releasing the retainers, by adjustment of the adjustable stop means.

4,363,462
RECOVERABLE FORMWORK PART FOR FORMING THE ANCHORING LOCATION OF A TENDON IN A CONCRETE STRUCTURAL COMPONENT

Johann Wlodkowski, and Dieter Jungwirth, both of Munich, Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 227,136
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 8002045[U]
Int. Cl.³ E04G 17/08, 17/04, 11/06
U.S. Cl. 249—190 5 Claims

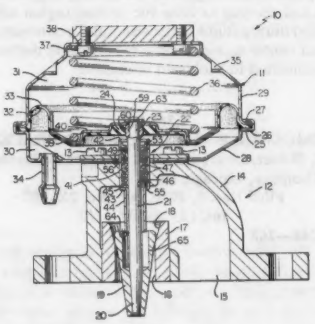


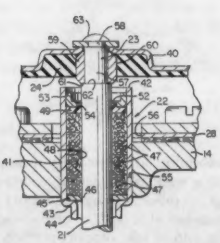
1. Recoverable formwork part constituting a portion of formwork for forming a concrete structural member and the formwork part being used for forming the location at which a tendon is anchored in the structural member and at which location an anchoring member is used having a passage therethrough for the tendon, said forwork part comprising an axially elongated tubulr sheath arranged to enclose an axially extending portion of the tendon when the concrete is poured into the formwork and a cup-shaped part extending in the axially elongated direction of said sheath and arranged to form a recess within the concrete structural member when the concrete is poured into the formwork, said sheath having a first end arranged to be located within the concrete when the concrete is poured and a second end arranged to be located exteriorly of the formwork when the concrete is poured into the formwork, said cup-shaped part having a first open end facing toward the first end of said sheath and a second open end facing toward the second end of said sheath, said first end of said sheath being spaced for a considerable axial length thereof from the first end of said cup-shaped part and said second end of said sheath being spaced in the axial length direction from the second end of said cup-shaped part, said sheath arranged to enclose the tendon in closely fitting relation for a relatively long portion of the axial length of said sheath from a location at least between the first ends of said sheath and cup-shaped part to a location at least within the axial extending length of said cup-shaped part, means engageable with said sheath for securing said sheath to the formwork, said cup-shaped part integral with said sheath intermediate the first and second ends of said sheath and the first open end of said cup-shaped part being threaded therein for receiving a threaded section of the anchoring member so that the anchoring member can be screwed into the threaded first open end of said cup-shaped part for securing the anchoring member in form-locking engagement with said cup-shaped part.

4,363,463
PLUNGER SEAL ASSEMBLY AND METHOD OF MAKING THE SAME

William T. Moon, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jun. 8, 1977, Ser. No. 804,598
Int. Cl.³ F16K 31/165
U.S. Cl. 251—61 8 Claims





1. In a method of making an assembly of a seal means and a

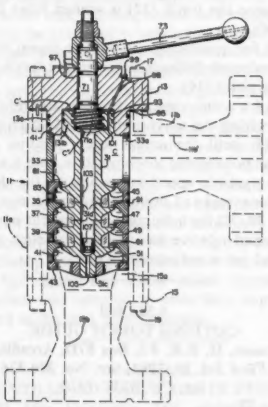
plunger movable relative to said seal means, the improvement comprising the steps of forming said seal means with a relatively thin and substantially flat washer-like resilient seal member having an opening therethrough, forming said seal means from a cup-like member through which said plunger extends, disposing said washer-like member in said cup-like member to be carried thereby, disposing a plurality of ring-like seal members in stacked relation in said cup-like member so as to receive said plunger therethrough, causing one of said ring-like seal members to abut said washer-like seal member, disposing a ring-like keeper in said cup-like member to sandwich said washer-like seal member between said keeper and said one ring-like seal member, and press-fitting said plunger through said opening in such a manner that an inner peripheral portion of said washer-like member is turned into substantially parallel sealing and wiping engagement with said plunger while being substantially transverse to the remainder of said washer-like member, said washer-like seal member initially extending radially inboard of said ring-like seal members and said keeper and said step of press-fitting said plunger through said opening of said washer-like seal member taking place after said washer-like seal member, said ring-like seal members and said keeper are disposed in said cup-like member.

4,363,464

ANGLE GLOBE VALVE

Richard W. Spils, 2225 Spenard Rd., Anchorage, Ak. 99503

Filed Jul. 3, 1980, Ser. No. 165,694
Int. Cl.³ F16K *47/04*
U.S. Cl. 251—121 **7 Claims**



1. In a multiple stage valve having walls defining a cavity, a stack of separate stage rings arranged within said cavity,

said stage rings defining a flow passageway for conducting fluid from an inlet in said body axially through said stack to an outlet from said body,

and a valve member within said cavity cooperatively related to said stage rings to control said axial fluid flow through said valve,

each stage ring having a ring portion and an inwardly projecting annular flange,

said flange having an upstream face, a downstream face, and an intermediate face,

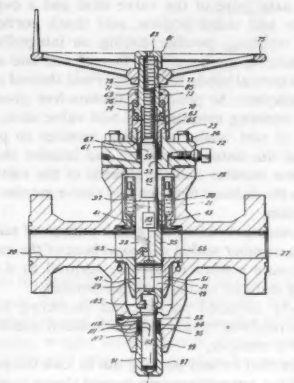
said downstream face of at least certain rings being formed with plural stepped portions.

4,363,465

EXTREME TEMPERATURE, HIGH PRESSURE BALANCED, RISING STEM GATE VALVE WITH SUPER PRELOADED, STACKED, SOLID LUBRICATED, METAL-TO-METAL SEAL

Charles D. Morrill, Bellaire, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 16, 1976, Ser. No. 697,084
Int. Cl.³ F16K *41/04*
U.S. Cl. 251—214 **28 Claims**



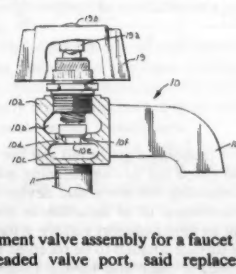
1. A Valve including a hollow body having a flow path therethrough, balanced rising stem gate means in the body reciprocal to control fluid flow through the body and including actuator and balance stems extending through ports in the body from the inside thereof, there being an annular pocket having a wall in the body around each stem, each of said walls being substantially parallel to the corresponding one of said stems, seal means in each pocket, and plug means engageable with each seal means for compressing said seal means, each seal means including at least one dished metal ring gasket and one sandwich ring adjacent thereto made of a more compliant material, each of said dished metal ring gaskets being deformed at its peripheral edges into metal-to-metal sealing engagement with the corresponding one of said stems and said walls upon compression of said seal means by said plug means.

4,363,466

REPLACEMENT VALVE ASSEMBLY

Joseph E. Bartlett, 215 S. Parker (Hwy. 7), Olathe, Kans. 66601

Filed Feb. 17, 1981, Ser. No. 234,943
Int. Cl.³ F16K *31/44, 25/00*
U.S. Cl. 251—357 **4 Claims**



1. A replacement valve assembly for a faucet body having an internally threaded valve port, said replacement assembly comprising:

a sleeve member threadably received by said valve port to adjustably penetrate the faucet body, said sleeve member

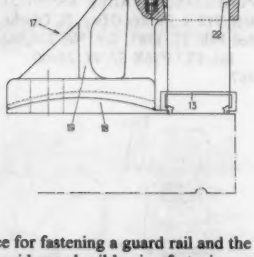
having first and second threaded interior bores separated by an annular interior shoulder;
a gasket encircling said sleeve member;
a lock nut carried on said sleeve member to urge said gasket to engagement with the faucet body and to lock the position of said sleeve with respect to the faucet body;
a valve stem disposed centrally through said sleeve member and threadably received by said first threaded interior bore, said stem having upper and lower ends and said lower end having an axial bore therein;
a washer retaining member having a shank portion received by said axial bore of the valve stem and a cup portion joined to said shank portion, said shank portion of the washer retaining member having an integrally formed hemisphere on the upper end thereof and said axial bore having a central recess in the upper end thereof to receive said hemisphere to provide a friction-free pivot of said washer retaining member with said valve stem, said cup portion of said washer retaining member so positioned such that the distance between said interior shoulder of said sleeve member and the threads of the valve stem is less than the distance between said sleeve member and said cup portion;
an O-ring retainer holding the shank portion of said washer retaining member within said axial bore of the valve stem;
a valve closure washer removably secured to the washer retaining member within said cup portion;
an exteriorly threaded packing nut encircling said valve stem and received by said second threaded interior bore of said sleeve member,
a jam nut carried on said packing nut to lock the position of said packing nut with respect to said sleeve member; and
a packing gasket encircling said valve stem and urged to sealing engagement with said valve stem and said interior shoulder of said sleeve member by said packing nut, to provide a leak-proof seal.

4,363,467

FASTENING DEVICES FOR GUARDRAILS

Andre Bos, Toulouse, France, assignor to Technal International, France

Filed Sep. 9, 1980, Ser. No. 185,595
Claims priority, application France, Sep. 14, 1979, 79 23046
Int. Cl.³ E04H *17/14*; E04F *11/18*
U.S. Cl. 256—68 **7 Claims**



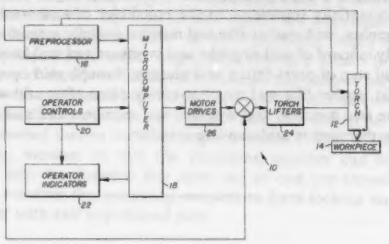
1. A device for fastening a guard rail and the like to a building element, said guard rail having fastening posts and at least a bottom rail connecting the posts, said device comprising: an anchor plate constructed to be securable to the building element and having an upper support surface; a base plate having a lower support surface adapted to be received by said support surface of the anchor plate and having fastening means for retaining said fastening posts in vertical position, wherein said fastening means projects horizontally with respect to the anchor plate and to the rest of the base plate by an amount in excess of the size of said guard rail in the projecting direction and is located at a distance from said building element, whereby the post may be supported on the building element and the bottom rail may be placed at any level between the building element and said fastening means; and a locking member for locking said one post in said fastening means.

4,363,468

CUTTING TORCH HEIGHT CONTROL APPARATUS

Stephen L. Noe, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 20, 1979, Ser. No. 84,951
Int. Cl.³ B23K *7/10*
U.S. Cl. 266—76 **18 Claims**



1. An apparatus (10) for controlling the distance of at least one cutting torch (12) from an associated reference point (14), comprising:
means (24, 26) for moving the torch (12) toward and from the reference point (14);
means (16) for generating a position signal representative of the distance the torch (12) is spaced from the reference point (14);
means (64) for generating a reference signal representative of a preselected distance between the torch (12) and the reference point (14);
means (18) for comparing the position and reference signals and energizing the moving means (24, 26) for moving the torch (12) until the actual torch position substantially equals the preselected torch position, said torch (12) moving at a variable speed according to the difference between the actual and desired torch positions; and
means (68, 70, 72) for indicating a loss of cut when said torch is positioned relative to a workpiece such as to cut the same, and yet is not causing a cut.

4,363,469

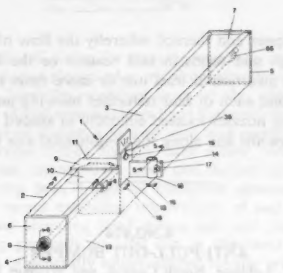
CUTTING TORCH GUIDE

Robert E. Cruzan, II, R.R. #2, Box 87D, Arcadia, Ind. 46030

Filed Jul. 24, 1981, Ser. No. 286,326
Int. Cl.³ B23K *7/10*
U.S. Cl. 266—77 **1 Claim**

1. A cutting torch guide comprising an upward opening channel having two ends and having provided lengthwise thereon guide means adapted to engage a guide block wherein each of the said ends is closed by an end plate joined to the said channel and wherein each of the said end plates has provided therethrough a hole adapted to receive a bushing, a body portion of a shoulder nut, and a threaded rod inserted therethrough; a rod adapted to and extending lengthwise within the said channel and inserted and extended through the aforesaid holes in the aforesaid end plates and having provided thereon external threads adapted to engage a torch holder assembly and adapted to receive thereon a plurality of shoulder nuts and a plurality of jam nuts and being adapted at one end thereof to be coupled to a power source for rotational movement about the longitudinal axis thereof; connector means for detachably and rotatably coupling the aforesaid rod to the aforesaid end

plates comprising a pair of bushings, a pair of shoulder nuts and a pair of jam nuts; and a torch holder assembly comprising a vertical plate having two opposing surfaces and having a hole therethrough adapted to receive the aforesaid rod inserted therethrough and adapted for reciprocating lengthwise movement within the said channel and adapted to engage the aforesaid guide means on the aforesaid channel and having provided on each of the said opposing surfaces thereof a nut-stop; a pair of nut-stops mounted on the aforesaid opposing surfaces of the aforesaid plate and adapted to engage a pair of rod support nuts mounted on the said rod and on opposite sides of the said plate and adapted to prevent the said nuts from rotating on the said rod and to prevent the said rod from making contact with the said plate; a pair of rod support nuts adapted to be threaded onto the aforesaid rod and adapted to engage the aforesaid nut-stops and to cooperate with the said nut-stops to prevent the said rod from coming into contact with the aforesaid plate; a torch support bracket mounted on the aforesaid guide block



adapted to receive a rotatable plate means detachably coupled thereto and having provided thereon indexing means adapted for cooperation with indexing means on a rotatable plate means for adjusting the height of a cutting torch; plate means adapted to be detachably and rotatably coupled to the aforesaid bracket means and having provided thereon indexing means adapted to cooperate with the aforesaid indexing means on the aforesaid bracket means for adjusting the height of a cutting torch and having attached thereto a horizontal support bar adapted to receive a tubular means tiltably and detachably coupled thereto; connector means for detachably coupling the aforesaid rotatable plate means to the aforesaid torch support bracket; a tubular means tiltably and detachably coupled to the aforesaid horizontal bar means and adapted to receive a flame torch detachably mounted thereto; coupling means for tiltably and detachably coupling the aforesaid tubular means to the aforesaid bar means; and screw means mounted in the said tubular means and adapted to reversibly engage and hold a flame torch in the said tubular means.

4,363,470

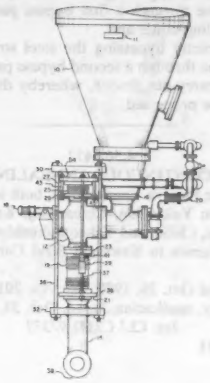
GAS-ENTRAINED PARTICULATE FEED SYSTEM

Kenneth D. Ives, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 2, 1981, Ser. No. 326,733
Int. Cl.³ C21B 7/24
U.S. Cl. 266—81 **5 Claims**

1. In apparatus for feeding particulates entrained in a pressurized gas to a process vessel, said apparatus including a container for holding a supply of particulates, means for indicating differential weight of said container in order to measure particulate feed rate to the vessel, a pipe system connecting said container to the process vessel, means for supplying gas to said container and pipe system, a valve having inlet and outlet ports connected in said pipe system for regulating flow of gas and particulates to the vessel, and an assembly including cooperating expansion means and spacer bar means for (a) permitting free vertical movement of said container for weighing purposes without restraint by said pipe system, and (b) absorbing reaction forces on said valve due to flow of pressurized gas through the outlet thereof,

the improvement in said apparatus which comprises:



means for applying sufficient compressive prestress to said spacer bar means to substantially prevent extension thereof during feeding of particulates to said vessel,

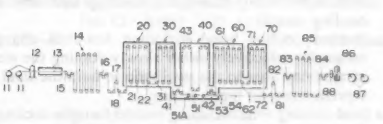
whereby, weight measurements of said container are not significantly affected by reaction forces on said valve.

4,363,471

STEEL STRIP CONTINUOUS ANNEALING APPARATUS

Fumiya Yanagishima; Yuji Shimoyama; Hideo Sunami; Yukio Ida; Goji Katsushima; Munetoshi Suzuki, and Takeo Ohnishi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 21, 1980, Ser. No. 199,199
Claims priority, application Japan, Oct. 31, 1979, 54-141505
Int. Cl.³ C21D 9/56
U.S. Cl. 266—111 **9 Claims**



1. A steel strip continuous annealing apparatus comprising:

a heating-soaking zone for heating a steel strip to a predetermined temperature and for soaking the steel strip at said temperature;

a first cooling zone subsequent to said heating-soaking zone for rapidly cooling the steel strip at a predetermined cooling rate;

first forcible cooling means incorporated in said first cooling zone for operation of the rapid cooling;

a second cooling zone subsequent to said first cooling zone for slowly cooling the steel strip or holding the steel strip at a predetermined temperature;

hot-cold change-over means in said second cooling zone for selectively either slowly cooling the steel strip or holding the steel strip at a predetermined temperature;

a third cooling zone subsequent to said second cooling zone for cooling the steel strip to substantially room temperature;

second forcible cooling means incorporated in said third cooling zone for operation of the cooling to substantially room temperature;

a steel strip feeder for feeding the steel strip into said heating-soaking zone;

a steel strip carry-out device for carrying the steel strip out of said third cooling zone;

means for directly bypassing the steel strip from the heating-soaking zone through a first bypass passageway to said second cooling zone; and

means for directly bypassing the steel strip from the first cooling zone through a second bypass passageway to said steel strip carry-out device, whereby different grades of steel may be processed.

4,363,472

STEEL STRIP CONTINUOUS ANNEALING APPARATUS

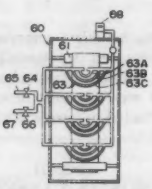
Yuji Shimoyama; Fumiya Yanagishima, both of Ichihara; Hideo Sunami, Chiba; Yukio Ida, Chiba; Goji Katsushima, Chiba; Takeo Ohnishi, Chiba, and Takeo Fukushima, Hiroshima, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Oct. 28, 1980, Ser. No. 201,586

Claims priority, application Japan, Oct. 31, 1979, 54-141499

Int. Cl.³ C21D *9/573*

U.S. Cl. 266—111 **11 Claims**



1. A steel strip continuous annealing apparatus for annealing a steel strip comprising:

a steel strip feeder;

a heating-soaking zone for heating and soaking the steel strip at a predetermined temperature;

a first cooling zone including first forcible cooling means for rapidly cooling the steel strip at a predetermined cooling rate, said first forcible cooling means provided thereon with self-cooling means for cooling said first forcible cooling means;

a second cooling zone including hot-cold change-over means for selectively either slowly cooling the steel strip or applying heat to the steel strip to hold the steel strip at a predetermined temperature;

a third cooling zone including second forcible cooling means for cooling the steel strip to substantially room temperature; and

a steel strip carry out device.

4,363,473

APPARATUS FOR REDUCING IRON ORE OR THE LIKE

Toshio Nanjo, Tokyo; Akinori Nakamura, Kamakura, and Hidekazu Ishikawa, Iwakuni, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

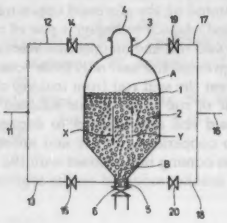
Continuation of Ser. No. 111,107, Jan. 10, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,571

Claims priority, application Japan, Jan. 19, 1979, 54-5187

Int. Cl.³ F27B *1/06*

U.S. Cl. 266—187 **4 Claims**

1. An apparatus for reducing the iron ore or the like wherein at least two pairs of reductant blowing and discharging pipes are communicated with a shaft reactor or the like and are communicated with a reductant supply line and a spent reductant discharge line through valving means adapted to selectively communicate said blowing and discharging pipes with said supply and discharge lines so that the reductant may be blown into said reactor or the like from an upper end thereof through said blowing or discharging pipe toward a lower end of the reactor and may be discharged from said reactor or the like from the lower end thereof through said discharging or blowing pipe, and after a predetermined time interval the reductant may be blowing into said reactor or the like from the lower end thereof and discharged from said reactor or the like



from said upper end thereof, whereby the flow of said reductant through said solids in said reactor or the like may be reversed in direction at least one or more times in one batch operation, and each of said reductant blowing and discharge pipes having nozzles located centrally in spaced locations in said shaft reactor and along the longitudinal axis thereof.

4,363,474

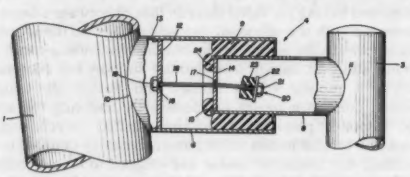
ANTI-PULL-OUT BUMPER

Raymond F. Leblanc, North Canton, and William T. Cummins, Mogadore, both of Ohio, assignors to Teledyne Industries, Inc., Calif.

Filed Apr. 29, 1981, Ser. No. 258,610

Int. Cl.³ F16M *7/00*; E02B *3/22*

U.S. Cl. 267—140 **4 Claims**



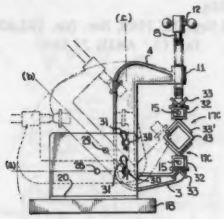
1. An anti-pull-out mechanism for a shock cell having inner and outer metal pipe members each of which has inner and outer ends joined by a rubber sleevelike body between the outer end of the outer pipe member and the inner end of the inner pipe member; including first rigid metal limit means mounted in fixed position within the inner end of said outer pipe member, second rigid metal limit means mounted in fixed position within the inner end of said inner pipe member, there being aligned openings formed in said first and second limit means, a flexible metal snub member extending through said aligned openings having inner and free ends and having an enlarged head at its inner end engaged with the first limit means and having an enlarged head at its free end located within the inner pipe member, said snub member having a length between enlarged heads greater than the normal space between said first and second limit means to define a predetermined snub distance, and stop means associated with the enlarged head at the snub member free end engageable with the second limit means when the inner pipe member moves telescopically out of said outer pipe member said predetermined snub distance to prevent further movement of said inner pipe member out of said outer pipe member.

4,363,475

VISE-LIKE C-CLAMP FOR GRIPPING VARIOUSLY SHAPED WORK PIECES IN VARYING POSITIONS

Robert W. McCarty, 26903 Cook Rd., Olmsted Falls, Ohio 44138

Filed Sep. 8, 1980, Ser. No. 185,325
Int. Cl.³ B23Q 1/04
U.S. Cl. 269—69 5 Claims



1. A vise-like C-clamp for gripping variously regularly and irregularly shaped elongated work pieces therein comprising a shank with laterally extending arms at the opposing ends thereof, one of said arms having a fixed flattened clamping jaw, and the other of said arms formed with boss means supporting adjusting screw means therein, said screw means having clamping head means on an inner end thereof opposing said fixed clamping jaw, a pair of elongated generally square-shaped bar means extending transversely of and fixedly secured to said clamping head means and said jaw, said bar means being generally parallel and in alinement with each other, a pair of generally square-shaped tubular gripping head means spacedly sleevably and removably arranged on each of said bar means and each formed with clamping surfaces for interfitting and coacting with contoured work pieces to be clamped therein and therebetween whereby adjustment of said screw means moves said bar means and said gripping means thereon relative to the other of said bar means on said fixed clamping jaw to effect clamping of a work piece therebetween, at least one pair of said gripping head means formed with generally V-shaped clamping cavities and flat clamping surfaces on opposing sides of the square tubing means thereof, retaining means arranged on the ends of said bar means for preventing displacement of said gripping head means, and flat base means for supporting said C-clamp including spaced apart flat parallel plate means having bent flat base flanges secureable to said flat base surface whereby said plate means is upstanding therefrom, said shank being insertable between said plate means, and said shank and plate means being apertured to receive locking pin means therethrough to selectively retain and support said C-clamp in generally horizontal, angled, and vertical positions.

4,363,476

HAND TOOL ACTUATOR

William C. Whittle, 1052 Bonner Ct., La Verne, Calif. 91750

Filed Nov. 17, 1980, Ser. No. 207,136
Int. Cl.³ B23Q 3/02
U.S. Cl. 269—96 4 Claims

1. A bench adapter for hand operated squeeze type tools comprising a base adapted to be supported by a work surface;

said base defining a longitudinal channel;

clamp means for securing one handle of a hand operated tool in said channel with the working portions of the hand tool extending out of the channel into a work position;

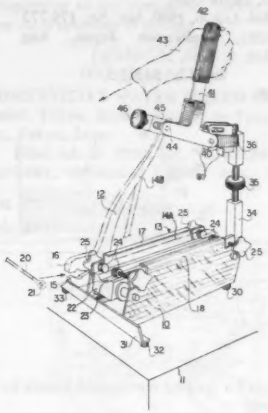
link means pivotally connected to said base for rotating about a generally horizontal axis;

handle means pivotally connected to said link means;

clamp means pivotally connected to said handle means;

said clamp means adapted to receive a second handle of the tool to be actuated;

said handle including an extended portion adapted to be manipulated by the operator to pivot said clamp, said handle, and said link to advance the second handle of the work tool toward the first handle thereof to operate the tool;



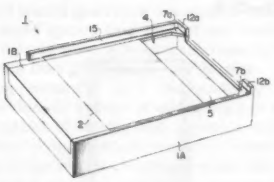
wherein said link means includes means for adjusting the length thereof to vary the extent of travel of the second handle of the tool.

4,363,477

EXTRA SHEET FEEDER FOR COPYING MACHINE

Kiyoshi Miyashita, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Dec. 21, 1979, Ser. No. 105,902
Claims priority, application Japan, Feb. 2, 1979, 54-11136
Int. Cl.³ B65H 5/20, 1/04
U.S. Cl. 271—9 20 Claims

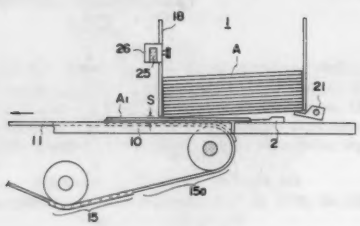


1. An extra sheet feeder for a copying machine comprising a feed mechanism disposed to be movable toward and away from a stack of record sheets in a container for movement into engagement with an uppermost one of the record sheets in the stack to remove it from the container, an uppermost stop against which the uppermost sheet of said stack may be biased, means defining a path disposed above the stack of record sheets and into which an extra sheet not associated with said stack can be inserted, and a positioning member, separate from said uppermost stop and stationary with respect thereto, against which the front edge of said extra sheet may be abutted, said positioning member being located above said uppermost stop and at the forward end of said path to position an inserted extra sheet at a feed position.

4,363,478
METHOD AND APPARATUS OF FEEDING CORRUGATED BOARDS

Yasuhiro Tsukasaki, 2-19, 4-chome, Higashi Kagaya, Suminoeku, Osakashi, Japan (559)

Filed Aug. 6, 1980, Ser. No. 175,772
Claims priority, application Japan, Aug. 8, 1979, 54/101680[U]; Jan. 9, 1980, 55/1484[U]
Int. Cl.³ B65H 5/00
U.S. Cl. 271—10 3 Claims

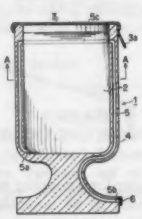


1. An apparatus for feeding corrugated boards to a printing station comprising:
a hopper for containing a stack of said boards;
means for conveying one of said boards from said hopper to said printing station;
said means for conveying having a plurality of belts including porous portions longitudinally interspersed with other portions;
one guide bar intermediate each adjacent pair of said plurality of belts; and
said porous portions projecting above a top surface of said guide bars and said other portions being depressed below said top surface;
means for applying suction through said porous portions whereby said one of the boards is adhered to said plurality of belts.

4,363,479
MAGIC CONTAINER

Tatsuo Urasaki, 4-58-7, Narashinodai, Funabashi-shi, Chibaken, Japan

Filed May 8, 1981, Ser. No. 261,920
Int. Cl.³ A63J 23/00
U.S. Cl. 272—27 N 3 Claims

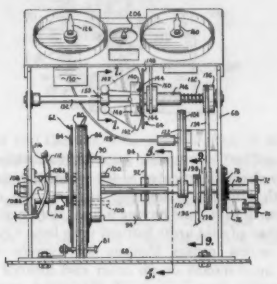


1. A container for containing a liquid such as cold beverage, said container having a peripheral wall and an upper opening for use in drinking the container contents, said wall containing a conduit which has an inlet port communicated with the interior of the container and an outlet port communicated with the exterior of the container, the inlet port being located at a position higher than the outlet port, said conduit having a rising portion which communicates with said inlet port, an uppermost portion which communicates with said rising portion and a descending portion which communicates with said uppermost portion and with the outlet port, said upper opening being closed by a cover which can be opened, and the outlet port of said conduit being sealed by a detachable sealing means from the external side.

4,363,480
EXERCISE DEVICE

Milton W. Fisher, Blue Springs, and Glen E. Henson, Independence, both of Mo., assignors to MGI Strength/Fitness, Inc., Independence, Mo.

Filed Sep. 30, 1980, Ser. No. 192,609
Int. Cl.³ A63B 23/06
U.S. Cl. 272—69 12 Claims



1. Exercise apparatus comprising:
a rotatable shaft;
a first member presenting a first surface;
means for holding said first member against rotation with the shaft;
a second member presenting a second surface and being coupled with the shaft for rotation therewith and movable toward and away from said first surface for engagement with the latter upon rotation of the shaft;
means adapted to be acted upon by a user of the apparatus for rotating said shaft;
a plurality of generally flat plates extending longitudinally in a direction parallel to said shaft and coupled with the latter; and
plate mounting means comprising first disc means journaled on said shaft, collar means mounted on said disc means and extending therefrom in the direction of said plates, the ends of said plates abutting said first disc means, and second disc means being rigid with said shaft and spaced from said first disc means, said second disc means having slots for receiving the ends of said plates and presenting a keeper ring to restrain lateral movement of said plates while accommodating pivotal movement in a direction perpendicular to the restrained lateral movement,
whereby said plates pivot in response to rotation of said shaft and in proportion to the speed of rotation thereby urging said second surface toward said first surface to increase the frictional resistance between the surfaces as the speed of rotation of said shaft increases and withdrawing the plates as the speed of rotation of said shaft decreases.

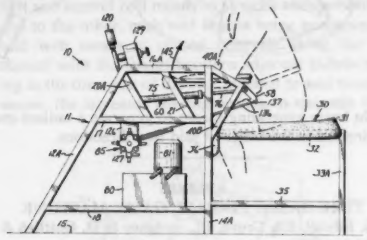
4,363,481
EXERCISE DEVICE

David T. Erickson, 4880 Hwy. #101, Minnetonka, Minn. 55343

Filed Nov. 20, 1980, Ser. No. 208,659
Int. Cl.³ A63B 21/00
U.S. Cl. 272—125 27 Claims

1. An exercise device comprising: a frame; a reaction bar engageable by an exercising person for sequential movement with respect to the frame by the exercising person in a first direction and in a second direction opposite to the first direction; means mounting the reaction bar on the frame for move-

ment relative to the frame whereby said reaction bar has a first limit of travel in the first direction and a second limit of travel in the second direction; fluid operated means connected between the frame and the reaction bar for exertion of fluid force on the reaction bar in a direction tending to move the reaction bar in the second of said directions; first means associated with the fluid operated means to change the fluid force exerted by the fluid operated means, and second means associated with



the reaction bar engageable with the first means when the reaction bar reaches the second limit of travel to provide a first force value, and when the reaction bar reaches the first limit of travel to provide a second force value, whereby the exercising person exerts manual force on the reaction bar opposed to the force exerted upon the reaction bar by the fluid operated means to overcome the fluid force to move the reaction bar in the first direction and then resists the fluid force while permitting movement of the reaction bar in the second direction.

4,363,482

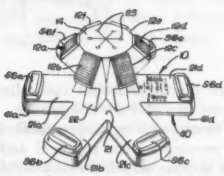
SOUND-RESPONSIVE ELECTRONIC GAME

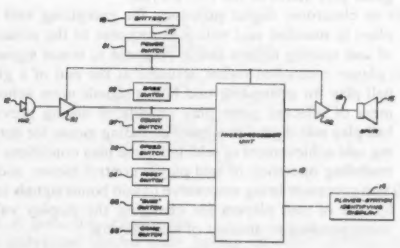
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 11, 1981, Ser. No. 233,461

Int. Cl.³ A63F 9/00

U.S. Cl. 273—1 GC **9 Claims**





1. An electronic game apparatus comprising:

electronic means for generating player-interrogation signals;

electronic means for defining a "correct" sequence of auditory and switch-closure player responses to the player-interrogation signals in accordance with game rules;

electronic means for receiving auditory player response to the player-interrogation signals, an electronic means for receiving switch-closure player responses to the player-interrogation signals, and electronic means for comparing the auditory and switch-closure player responses with the "correct" responses; and

means, responsive to the comparing means, for indicating whether each response is correct.

4,363,483

COMPETITIVE WATER FILLED GAME

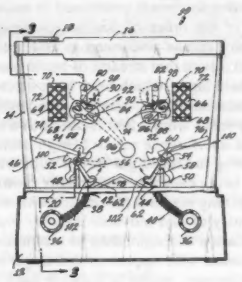
Koichi Minami, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,661

Claims priority, application Japan, Aug. 20, 1979, 54-114112[U]

Int. Cl.³ A63F 7/06

U.S. Cl. 273—85 C **4 Claims**



1. A game having a transparent housing, a liquid located within said housing, a movable member having a specific gravity greater than the specific gravity of said liquid, said movable member located within said housing in said liquid, two circulating means for circulating said liquid within said housing, each of said circulating means capable of being independently operated such that each is capable of removing liquid from the interior of said housing and ejecting a stream of said liquid into the interior of said housing at a variable rate, each of said circulating means having a nozzle directed into the interior of said housing for ejecting said stream of liquid into the interior of said housing the improvement which comprises:

said nozzles located separately within the interior of said housing and spaced apart from one another such that said stream of liquid ejected from each of said nozzles will at least each initially move independently from the stream of liquid ejected from the other of said nozzles;

two pivoting members each independently pivotally mounted within the interior of said housing in said liquid and each capable of moving with respect to said housing, one of said pivoting members operatively associated with the nozzle of one of said circulating means and the other of said pivoting members operatively associated with the nozzle of of the other of said circulating means, each of said pivoting members independently being capable of being pivoted with respect to said housing in response to impingement upon at least a portion of each of said pivoting members by said stream of liquid ejected from its associated nozzle, each of said pivoting members capable of diverting the flow of the stream of liquid from its associated nozzle within the body of said liquid in response to movement of said pivoting member;

each of said pivoting members capable of independently causing movement of said movable member within said liquid within said housing when said movable member is positioned with respect to said pivoting member causing said movement such that it can be contacted by either said pivoting member causing said movement or by a current flowing within said liquid which was caused to flow

within said liquid in response to movement of said pivoting member when said pivoting member is caused to pivot by being impinged upon by said liquid ejected from its associated nozzle;

two independent target means located within the interior of said housing within said liquid, each of said target means capable of serving as a target for said movable member;

at least a portion of said flow of the stream of the liquid which is diverted by said pivoting members being directed toward an area located within said housing between said nozzles and said target means;

each of said target means includes a vertically oriented opening, said opening sized to allow said movable member to pass through said opening into said target means;

two interference means positioned within said housing, one of said interference means positioned in association with the opening of one of said target means and the other of said interference means positioned in association with the opening of the other of said target means, each of said interference means positioned in association with one of said nozzles such that streams of liquid passing within said body of said liquid which have been ejected through said nozzle cause said interference means associated with said nozzle to move from a first location to a second location;

each of said interference means being positioned in front of said opening in said target means with which it is associated and being capable of essentially closing off a portion of said opening in said target means with which it is associated to entry of said movable member into said opening;

said first location corresponding to positioning of said interference means with respect to said target means such that said interference means is located such that it inhibits entry of said movable member into one side of said opening, said second location corresponding to positioning of said interference means with respect to said target means such that said interference means is located such that it inhibits entry of said movable member into the other side of said opening;

said one of said target means being positioned above one of said pivoting members and said other of said target means being positioned above the other of said pivoting members and said streams of liquid being ejected from said nozzle being generally directed upwardly within said housing toward said interference means;

said housing further including two vertically oriented interference track means, one of said interference means located in one of said track means, the other of said interference means located in the other of said track means, each of said interference means biased downwardly within its respective track means by gravity from said second location to said first location;

each of said interference means including at least one baffle means, said baffle means capable of being acted upon by currents within said liquid such that currents within said liquid are capable of moving said interference means against the bias of gravity from said first location to said second location.

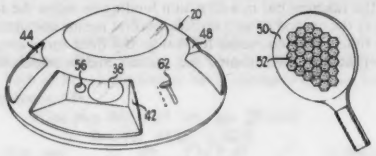
4,363,484

ELECTRONIC TABLE TENNIS GAME APPARATUS

Jeffrey D. Breslow, Highland Park, Ill.; Rex M. Harper, Portland, Me., and David A. Glickson, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 19, 1980, Ser. No. 208,192
Int. Cl.³ A63F 7/06
U.S. Cl. 273—85 G **66 Claims**

1. A player response game apparatus, comprising means for selectively generating beams of radiant energy in one of at least two different directions relative to a player station, player operated reflector means for intercepting a light beam from said generating means, means for detecting radiant energy which is reflected back from a player operated reflector means to a location adjacent the source of said one beam, and means responsive to said detecting means for controlling said selective light beam generating means to generate a radiant energy beam directed in the other of said two directions.

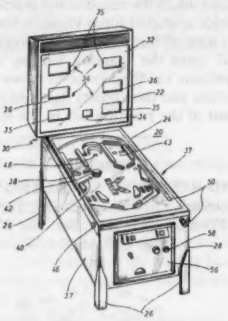


4,363,485

TIME BASED PINBALL GAME MACHINE

Allen G. Edwall, Elk Grove, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Jul. 31, 1980, Ser. No. 174,029
Int. Cl.³ A63F 7/00
U.S. Cl. 273—121 A **47 Claims**



1. An electronic digital processor controlled pinball game machine for at least two players, comprising:

(a) a playfield having scoring targets thereon;

(b) a ball for moving on the playfield and engaging and actuating the scoring targets thereby defining ball play, a succession of ball plays defining a game play;

(c) a plurality of displays for indicating values representing game play status of the two players;

(d) an electronic digital processor for energizing said displays to manifest said values in response to the actuation of said scoring targets and in response to bonus signals;

(e) player controlled means actuable at the end of a given ball play for generating said bonus signals upon achievement of selected game play conditions during previous ball play said digital processor including means for detecting said achievement of selected game play conditions and enabeling operation of said player control means; and

(f) said processor being responsive to said bonus signals input by one of said players for changing the display values corresponding to another of said players.

4,363,486

ELECTRONIC GAMING APPARATUS

Jagdish C. Chaudhry, and Lorena Chaudhry, both of 1198 Fremont Ave., Los Altos, Calif. 94022

Filed Oct. 30, 1980, Ser. No. 202,115
Int. Cl.³ A63F 5/04
U.S. Cl. 273—143 B **7 Claims**

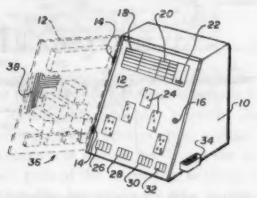
6. Multi-image display means for selectively positioning one

of several individual images forming communicative indicia behind a viewing aperture comprising:

first reel means;

second reel means;

elongated web means carrying a series of discrete indicia disposed along its length and having one end affixed to said first reel means and its other end affixed to said second reel means; said web means being wound about said first and second reel means so as to be transportable from one to the other, each said indicia being positioned upon said web means at spaced intervals along the length thereof with the spaces between adjacent indicia increasing in the direction of the end attached to said second reel means, the increased spacing serving to maintain the center of each indicia coincident with a particular radial of said first reel means as said web means is wound thereupon;



first gear means rigidly affixed to said first reel means;

second gear means resiliently coupled to said second reel means;

drive gear means driveably coupled to both said first and second gear means; and

motor means coupled to said drive means and operative to simultaneously drive said first and second reel means so that said web is unwound from one reel and wound onto the other, the resilient coupling between said second gear means and said second reel means being operative to accommodate any reel rotation differential required to maintain taughtness in said web means.

4,363,487

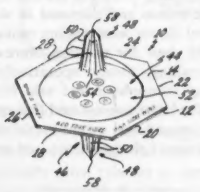
GAME TOP

Henry H. Hall, Racine, Wis., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 15, 1980, Ser. No. 187,109

Int. Cl.³ A63F 5/04

U.S. Cl. 273—147 **3 Claims**



1. A game top comprising:

a polygonal shaped plate having an upper surface and a lower surface;

game indicia printed on at least one of said surfaces;

first and second transparent, unitary hemispherical dome and spindle assemblies fixed to said upper and lower surfaces of said plate along a lower edge of said domes;

each of said dome and spindle assemblies comprising a hollow hemispherical dome having a crown which carries a spindle, said spindles being hollow and having a plurality of spines and a pointed tip; and an annular flange encompassing said lower edge of each of said domes, said flanges being heat sealed to said surfaces of said plate.

4,363,488

SWING FORCE INDICATOR FOR PLAYING PIECE OF SPORTS EQUIPMENT

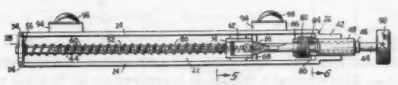
Arthur M. Maroth, and Sybil Maroth, both of 1101 SW. 13th Pl., Boca Raton, Fla. 33432

Continuation-in-part of Ser. No. 96,326, Nov. 21, 1979, Pat. No. 4,270,753. This application May 18, 1981, Ser. No. 264,456

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.³ A63B 69/36

U.S. Cl. 273—186 A **8 Claims**



1. A swing-force indicator for a playing piece of sports equipment intended to be swung in the playing of a game, comprising, in combination:

(a) an elongate turnable shaft having a lateral abutment spaced inwardly from one of its ends,

(b) a finger piece rigid with the shaft and carried by said one end,

(c) said shaft having a bearing area between the rigid finger piece and the abutment,

(d) a pair of bearings for the shaft,

(e) one of said bearings engaging and supporting said bearing area of the shaft between said finger piece and lateral abutment, and the other bearing engaging and supporting the other end of the shaft,

(f) a torsion spring encircling the shaft at a location inwardly of said one bearing, one end of said spring engaging the abutment on the shaft and the other end of the spring reacting against said one bearing, thereby to bias the shaft for turning in said one bearing,

(g) a weight member having an indicator, slidable along the shaft,

(h) a compression spring on the shaft, engaging the weight member to bias the latter toward one end of the shaft,

(i) said weight member having a pawl and said shaft having a row of teeth cooperable with the pawl to hold the weight member in various adjusted positions against the action of said compression spring,

(j) said shaft having a smooth track on which the pawl can alternately ride when the shaft is turned against the action of said torsion spring, thereby to enable return of the weight member to a starting position under the action of said compression spring, and

(k) a housing carrying said bearings and enclosing the said shaft, weight member and springs.

4,363,489

ELECTRONIC STOCK MARKET TERMINAL GAME

Jan B. Chodak, Rancho Palos Verdes, and Luan G. Tran, Redondo Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

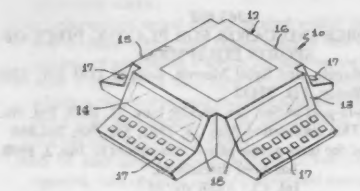
Filed Oct. 17, 1980, Ser. No. 197,882

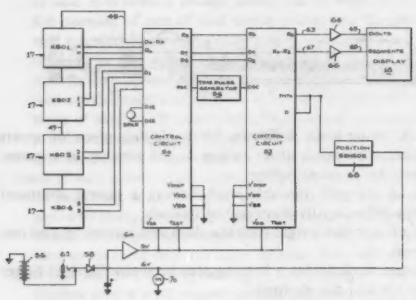
Int. Cl.³ A63F 3/00, 9/00

U.S. Cl. 273—237 **29 Claims**

1. A market game comprising at least two player positions each including display means for simulating a stock market terminal, control circuit means adapted to cause the display to indicate stocks available in the game and the prices thereof, and input means associated with each player position for signaling the control circuit means to purchase and sell shares of stock available, and in which the control circuit means includes means for automatically detecting whether a player

position is occupied, including means for determining whether the input means associated with that player position has been





actuated, and means for automatically simulating the play of a human player at any position at which the associated input means has not been actuated.

4,363,490

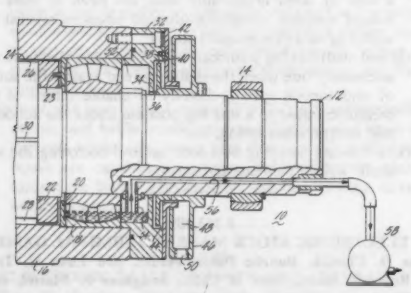
CROWN ROLL SEAL ARRANGEMENT SEALED BY LUBRICATING OIL IN LABYRINTH

Howard E. Kuehn, Orange, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 26, 1980, Ser. No. 190,946

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—15 **5 Claims**



1. A seal arrangement for a calender roll comprising:

a stationary roll shaft;

a roll shell rotatively journalled in a bearing at each end about said roll shaft;

a fluid passageway for permitting said bearings to receive lubricating fluid from a lubricating chamber;

a labyrinthian non-contact seal arranged on the outer side of said bearings on said shaft between said shaft and said roll shell; and

a fluid discharge system for maintaining a predetermined level of lubricating fluid about said bearings in said chamber and preventing passage of excess fluid through said labyrinthian seal.

4,363,491

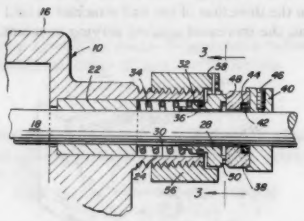
SHAFT SEAL ASSEMBLY

Vincent E. Secor, Port Ewen, N.Y., assignor to Stavo Industries, Inc., Kingston, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,793

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—81 R **5 Claims**



1. In combination with a housing component defining a bore formed therethrough including an outer end portion opening outwardly of said housing component, said outer end portion of said bore defining an enlarged counterbore whose outer end opens outwardly through an outwardly projecting externally threaded stuffing box on said housing portion, a shaft including a first end portion projecting through said bore and counterbore, bearing means seated in said counterbore journalling said first end portion from said housing component, first sleeve means loosely telescoped over said first end portion and including first and second ends with at least said first end projecting into the outer end portion of said counterbore, first seal means establishing a fluid-type seal between said first end portion of said first sleeve means and said counterbore while allowing slight axial and angular displacement of said first sleeve means relative to said stuffing box, a keying sleeve threaded on said stuffing box, said keying sleeve and said first sleeve means including a radial pin and slot connection keying said first sleeve means to said stuffing box against rotation relative thereto while allowing axial shifting of said first sleeve means relative to said stuffing box, second sleeve means mounted on said first end portion of said shaft outwardly of said first sleeve means and including first and second ends corresponding to the first and second ends of said first sleeve means, said second and first ends of said first and second sleeve means including opposing end faces normal to the axial center lines of said sleeve means and disposed in sliding contacting relation, said second sleeve means being mounted on said first end portion of said shaft for rotation therewith and against axial shifting therealong, means operatively connected between said housing component and said first sleeve means yieldingly biasing the latter toward said first end of said second sleeve means, and second seal means establishing a fluid-type seal between said second sleeve means and said first end portion of said shaft.

4,363,492

ROLLER SKI FOR TRAINING LONG DISTANCE SKIING

Arne Eriksson, Fornminnesvägen 3, Älvängen, Sweden (446 00)

PCT No. PCT/SE80/00062, § 371 Date Nov. 8, 1980, § 102(e) Date Nov. 7, 1980, PCT Pub. No. WO80/01880, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 4, 1980, Ser. No. 216,996

Claims priority, application Sweden, Mar. 8, 1979, 7902070; Finland, Mar. 7, 1980, 800712

Int. Cl.³ A63C *17/26, 5/00*

U.S. Cl. 280—11.1 BT **3 Claims**

1. A roller ski for training skiers of the type having a foot

plate with binding means adapted to retain the user's ski shoe in such a manner that the heel portion is freely pivotable about the firmly fixed toe portion, and which foot plate has rotatably mounted thereon a forward and a rear wheel, comprising supporting members arranged to extend upwards from the foot plate to form side supports for the user's lower legs, said supporting members being rigid side members which extend on

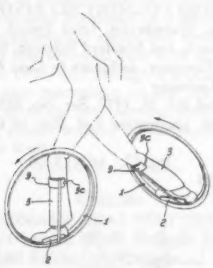
each side of the foot plate in arc-form upwards from the foot plate between its forward and rear portions for providing, during the pivoting of the heel portion around the binding means, lateral supports at a level just above the ski shoe, along the entire motion path of the lower leg, without thereby holding or hampering the leg in its motion in the longitudinal direction of the roller ski.

4,363,493

UNI-WHEEL SKATE

Paul S. Veneklasen, Santa Monica, Calif.

Filed Aug. 29, 1980, Ser. No. 182,486
Int. Cl.³ A63C *17/08, 17/14*
U.S. Cl. 280—11.2 **21 Claims**



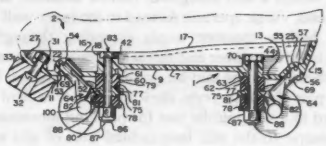
1. A uni-wheel skate, comprising
(a) a circular wheel having a rim arranged to rotate about a generally tilted axis so that the rim rotates in a plane which is generally tilted relative to vertical,
(b) a frame relative to which the rim rotates,
(c) satellite rollers rotatably attached to the frame and engaging the rim so as to determine the relative rotation of the rim with respect to the frame, and
(d) support means carried by the frame to receive the load of the rider's foot for transmission of the rider's body load to and through the frame and rollers to the wheel, said support means comprising a foot plate which is rotatably mounted to the frame to be rotatable relative thereto,
(e) and including a separate support associated with the frame to be rotatable relative to the frame, said separate support engageable with the rider's leg to maintain stability.

4,363,494

ROLLER SKATE

Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Jun. 16, 1980, Ser. No. 159,775
Int. Cl.³ A63C *17/02*
U.S. Cl. 280—11.28 **1 Claim**



1. In a steerable roller skate of the shoe skate variety, the improvement comprising an elongated, one-piece sole plate in the form of an open-topped dish with a bottom wall and a side wall and, at the upper edge of said side wall, a continuous rim, rising from the toe end toward the heel end to meet with a heel-less shoe sole uninterruptedly around said sole, a pair of support-shaft bosses extending upwardly from said bottom wall no higher than the said rim, each with an open-ended, smooth-walled, vertical passage, each boss being crowned with a lip around said passage defining a non-circular seat to receive the complementarily shaped head of a bolt threaded at its other end and each having reinforcing cross ribs integral with said bottom wall and integral with and extending between said bosses and said side wall, and a pair of bearing tongue seats formed in said botton wall, said seats and bosses having no reentrant surface with respect to the adjacent surfaces of the bottom wall, whereby the sole plate can be made in a simple two-piece mold with a straight draw.

4,363,495

SLOPING-TERRAIN VEHICLE

Kenneth A. Henson, 1 Regency Ct., Dundas, N.S.W., 2117, Australia

Filed Aug. 11, 1980, Ser. No. 176,806
Claims priority, application Australia, Aug. 20, 1979, PE0087
Int. Cl.³ B62B *13/16*
U.S. Cl. 280—12 H **12 Claims**

1. A sloping-terrain vehicle comprising a pair of terrain-engaging elements; flexible coupling means joining said pair of terrain-engaging elements in generally side-by-side relationship to thereby permit limited movement of said terrain-engaging elements with respect to each other; a handlebar extending

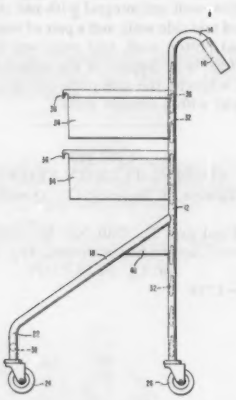
upwardly from each terrain-engaging element; and a foot-locating member mounted upon the upper-surface of each said terrain-engaging element, said flexible coupling means including an elongated, hollow member rigidly attached to the upper surface of each terrain-engaging element parallel to the longitudinal axis thereof; a pair of journal boxes each having a tongue extending from its lower side, said tongue being accommodatable within a said elongated, hollow member, adjacent its leading end, via an aperture formed in the inner wall of said elongated, hollow member; a pin extending through each elongated, hollow member and passing through a slot in a said tongue to thereby secure said tongue in said elongated, hollow member; a pair of linkage arms, the lower end of each of which is journalled in a said journal box for pivoting movement in a plane transverse to the said longitudinal axes of said terrain-engaging elements; and a cross-member, to each end of which is pivoted an upper end of a said linkage arm; whereby each said tongue is permitted three limited degrees of freedom of movement with respect to its associated elongated, hollow member.

4,363,496

MATERIAL HANDLING CART

Charles P. Schreiner, Saugatuck, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 4, 1980, Ser. No. 212,954
Int. Cl.³ B62B *3/10*
U.S. Cl. 280—47.35 **5 Claims**



1. A material handling cart for storing and supporting a plurality of material handling totes of different depths, said cart comprising:

a pair of spaced parallel vertical members;

a plurality of equidistantly spaced horizontal support rails interconnecting said pair of spaced parallel vertical members constructed and arranged to support material handling totes of different depths, said horizontal support rails being tubular and including a flat back portion and a front portion that is parallel with said back portion for its lower half and tapered towards said back portion for its upper half;

a forwardly and downwardly projecting support leg connected to each of said vertical members, said forwardly and downwardly projecting support legs terminating in a vertical portion remote from their connection to said vertical member; and

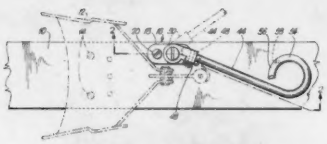
a first pair of casters, one each mounted in the bottom of each of said vertical members and a second pair of casters one each mounted in the end of each of said vertical portions of said support legs.

4,363,497

SKI TRACTION DEVICE

Gilles Lacelle, 32 Glenwood Dr., Aylmer, Quebec, Canada (J9H 1H7)

Filed Dec. 3, 1980, Ser. No. 212,423
Int. Cl.³ A63C *7/00*
U.S. Cl. 280—604 **2 Claims**



1. A traction assist device for skis comprising a base member fixedly mounted on said ski ahead of a ski harness, and a substantially rigid arm extending from said base member and terminating at its outer end in a loop adapted to receive the tip of a ski pole, the inner end of said arm being pivotally mounted on said base to be selectively movable between a first position above the ski and a second position wherein said loop is extended to one side of the ski;

said base member including resilient means and detent means for maintaining said arm in each of said first position above said ski and said second position to one side of said ski;

means for pivotally mounting said arm to said base member for movement between an upper position slightly above the top plane of said ski and parallel therewith to a lower position wherein said loop is below said ski; and

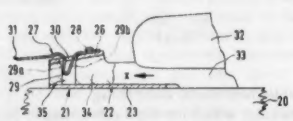
spring means for biasing said arm in said upper position, whereby said arm, when in said second position to one side of said ski, is adapted to be moved to said lower position under the urging of a ski pole tip placed in said loop.

4,363,498

CROSS COUNTRY SKI BINDING

Peter Biermann, Warmbronn; Otto Ewald, Griesheim; Rudi Feucht, Weissach, and Manfred Schmidt, Sindelfingen, all of Fed. Rep. of Germany, assignors to Geze GmbH, Leonberg, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,741
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1976, 2633373
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—615 **39 Claims**



1. Cross country ski binding assembly comprising:

forward ski boot support element means fixedly attachable to a ski, said support element means including forwardly converging guiding sidewall portions supportingly engageable with a flexible forward sole extension of a ski boot in such a manner as to permit lifting of the rear part of said ski boot from the ski, with a pivotal elastic rolling movement of the ski boot and sole extension about a cross-axis located at the sole extension forwardly of the toe part of the boot, and a holding portion for surroundingly holding a thickened end portion of said forward sole extension,

and resiliently biased latching means for latching said thickened end portion of the sole extension to said ski, said latching means including a resilient latching member on

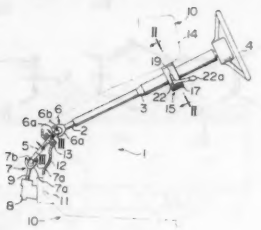
one of said holding portion and thickened end portion for automatically engaging with a surface on the other of said holding member and thickened end portion in response to insertion of said thickened end portion into said holding portion to resiliently force said sole extension forwardly against said converging portions to retain said sole extension in a position with said portions of said support element means supportingly engaging said sole extension to assist said latching means in maintaining said forward sole extension and therewith the ski boot in an in-use skiing position.

4,363,499

TILTABLE STEERING MECHANISM FOR AUTOMOBILES

Kenichi Watanabe; Kazuo Katayama, and Takao Kijima, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 13, 1980, Ser. No. 120,982
Claims priority, application Japan, Feb. 14, 1979, 54-18156[U]
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—775 **7 Claims**



1. A tiltable steering mechanism comprising a steering shaft, a steering column rotatably supporting said steering shaft and mounted on an instrument panel of an automobile at a lower portion thereof through adjusting means which provides adjustments at least in vertical directions, an intermediate shaft transversely immovably journalled on a stationary part of the automobile through bearing means and having one end connected through a first universal joint with an end of the steering shaft and the other end through a second universal joint with a steering gear mechanism so that the steering shaft is tiltably movable about the first universal joint upon adjustment of the adjusting means without corresponding movement of said intermediate shaft.

4,363,500

AUTOMATIC SEAT BELT DEVICE

Hisashi Ogawa, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 15, 1980, Ser. No. 197,016
Claims priority, application Japan, Jul. 18, 1980, 55-101527[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **2 Claims**

1. An automatic seat belt device comprising:

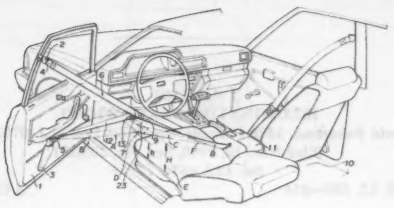
an upper anchor and a lower anchor secured to the upper and lower portions of an automotive door;

an outer belt connected at upper and lower ends thereof to said upper and lower anchors, respectively;

an inner belt connected at one end thereof through a ring joint to said outer belt and at the other end thereof to a retractor provided at the center of an automotive floor to extend from the retractor;

an outer belt weaving provided between the ring joint on said outer belt and said lower anchor attached to the lower portion of the door; and

a stopper secured to said outer belt weaving for preventing the ring joint from sliding down along said outer belt and located in such a range that the ring joint confines an occupant at his front abdominal portion when the seat belt of the three end type is mounted on the occupant and that the ring joint is retained sufficiently at the upper portion of said outer belt, wherein said stopper comprises an upper piece and a lower piece disposed at the upper and lower



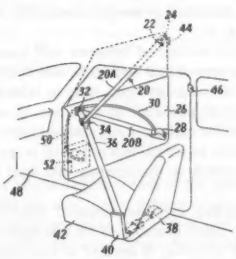
side surfaces of said outer belt weaving along said outer belt weaving for gripping said outer belt weaving therebetween, said upper and lower pieces secured at both side ends thereof to each other, and said stopper is elevationally swelled at said pieces upward and downward from the surface of said outer belt weaving thereby preventing the ring joint from sliding down along said outer belt.

4,363,501

PASSIVE TYPE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 230,267
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **8 Claims**



1. In a passive vehicle occupant restraint belt system having a belt guide member that is coupled to a restraint belt and is movable between a restraint location in which the belt engages an occupant and a release location in which the belt releases the occupant, a reversible drive motor, control means for activating the motor to drive it in one direction in response to opening of the vehicle door and in the opposite direction in response to closing of the vehicle door, a semi-flexible drive element coupled to the guide member, and a reduction device for transmitting power from the motor to the drive element, the improvement wherein the reduction device comprises a housing having first and second closed compartments separated by a common dividing partition, an output shaft journaled in the partition and having a first portion located in the first compartment and a second portion located in the second compartment; an output drive element affixed to the first portion of the output shaft and coupled to the guide element to drive it; an input shaft having its axis disposed orthogonically to the axis of the output shaft and extending into the second

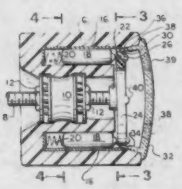
compartment; a worm gear affixed on the input shaft; a worm wheel rotably carried on the second portion of the output shaft and meshing with the worm gear; and an enclosed friction coupling received within the second compartment and interposed between the worm wheel and the output shaft, the compartmentalization of the casing and enclosing of the friction coupling enabling the input and output gears to be lubricated while excluding lubricant from the friction coupling.

4,363,502

ILLUMINATIVE SKATE WHEEL

David Bakerman, 1530 Palisade Ave., Fort Lee, N.J. 07024

Filed Nov. 10, 1980, Ser. No. 205,381
Int. Cl.³ A63C *17/26*
U.S. Cl. 280—816 **3 Claims**



1. In a skate having an axle, and a wheel rotatably mounted on said axle, the improvement which comprises

a pair of terminals mounted within said wheel and adapted to have an electrical potential applied thereacross, and

light emitting means operatively connectable to said terminals, mounted on said wheel and responsive to application of said electrical potential thereto for emitting light,

a source of electrical potential removably mounted within said wheel,

contact means connected between said source of potential and at least one of said terminals, said contact means being operative between an open state in which application of said electrical potential to said one of said terminals is interrupted for extinguishing said light emitting means and a closed state in which said potential is applied to said one of said terminals or illuminating said light emitting means, and

a translucent cap member mounted over the hub of said wheel and being illuminated by said light emitting means when said potential is applied to said terminal, said cap member being selectively engageable with said contact means and movably mounted on said wheel for movement between a first position in which said contact means is caused to be in said open state and a second position in which said contact means is caused to be in said closed state.

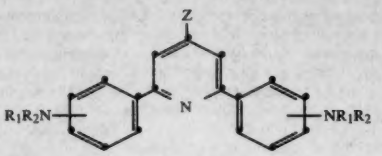
4,363,503

PYRIDINE COLOR FORMERS

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 243,798
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **5 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a color-forming substance comprising a compound having the formula

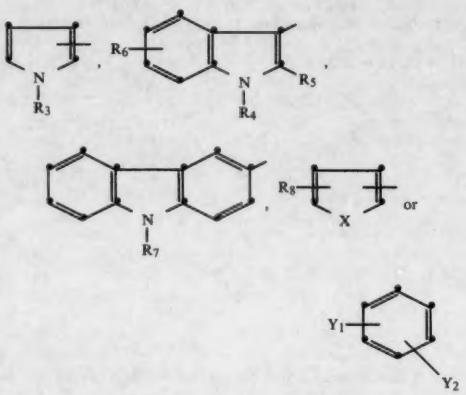


wherein:

R_1 and R_2 are the same or different and are selected from the group consisting of lower-alkyl and benzyl, or

NR_1R_2 is pyrrolidinyl, piperidinyl, or morpholinyl;

Z is naphthyl, 9-julolidinyl or a substituent having the formula



wherein

R_3, R_4, R_7 and R_8 are hydrogen or non-tertiary lower-alkyl;

R_5 is hydrogen, phenyl or non-tertiary lower-alkyl;

R_6 is hydrogen, non-tertiary lower-alkyl or non-tertiary lower-alkoxy;

X is O or S;

Y_1 and Y_2 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl, lower-alkoxy, halo, nitro, lower-alkoxycarbonyl, phenyl or NR_9R_{10};

R_9 is lower-alkyl or benzyl;

R_{10} is lower-alkyl, benzyl, cyano-lower-alkyl, or

NR_9R_{10} is pyrrolidinyl, piperidinyl, morpholinyl or isoindolinyl.

4,363,504

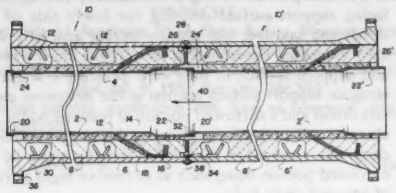
HIGH TEMPERATURE LINED CONDUITS, ELBOWS AND TEES

Angelo De Feo, Passaic, and Edward Drewniany, Bergen, both of N.J., assignors to Curtiss-Wright Corporation, N.J.

Filed Jan. 4, 1980, Ser. No. 109,628
Int. Cl.³ F16L *59/14*
U.S. Cl. 285—47 **29 Claims**

24. A high temperature lined conduit comprising, a liner member, a flexible insulating blanket around and in contact with said liner member, a pipe member around said blanket and spaced therefrom, a castable rigid refractory material between said pipe member and said blanket, a fixing member connected between said liner member and said pipe member adjacent one end thereof for substantially holding said liner member with respect to said pipe member in the vicinity of said fixing member and permitting the thermal expansion of said liner member with respect to said pipe member, said fixing member compris-

ing a truncated cone having an inner diameter end connected to said liner member and an outer diameter end connected to



said pipe member, and at least one anchor extending from said cone and into said castable material.

4,363,505

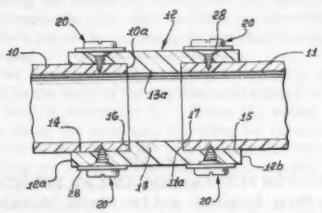
PIPE COUPLING

Alvin J. Smith, 228 Cordova Dr., Santa Barbara, Calif. 93109

Filed Apr. 20, 1981, Ser. No. 255,685

Int. Cl.³ F16L *47/02*

U.S. Cl. 285—369 **7 Claims**



1. In a coupling for interconnecting plastic pipe ends,

(a) a tubular coupling member consisting of plastic, and having a bore at its mid-portion, two counterbores respectively intersecting opposite ends of the member, and two annular step shoulders respectively between the counterbores and said bore,

(b) plastic pipe ends inserted into the counterbores to extend proximate the step shoulders, the pipe ends adhesively joined to the counterbores,

(c) threaded fasteners extending generally radially through the coupling member to intersect the counterbores, the fasteners having tapered threads and tips that penetrate radially into the pipe ends,

(d) the fasteners having heads and there being seal means sealing off between the fasteners and the coupling member and pressurized therebetween,

(e) each fastener having an annular tapered shoulder spaced from the head and located between said head and said tapered thread, the shoulder interfitting a tapered shoulder on the coupling and closer to said thread than said seal means, to limit said pressurization and the penetration of the tips into the pipe ends, the tapered shoulder flaring widely toward the seal means, the seal means comprising elastomeric washers.

4,363,506

LATCH HAVING A RELEASABLE ACTUATING ROD

Jean Rosell, "Le Mesnil Sterling", Etalondes 76260 Eu, France, assignor to La Perche, Escarbotin, France

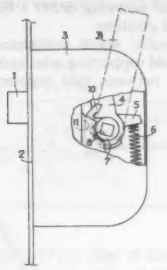
Filed Jul. 28, 1980, Ser. No. 172,829

Claims priority, application France, Jul. 30, 1979, 79 19525

Int. Cl.³ E05C *21/00*

U.S. Cl. 292—336.3 **3 Claims**

1. A latch comprising a case, a mechanism for actuating at least one bolt comprising a door-knob hub, an actuating rod received in the door-knob hub, an intermediate member rotatively mounted in the door-knob hub in the case, which rotatively mounts said door-knob hub the intermediate member having an aperture for receiving the actuating rod and being provided with a nose portion, the door-knob hub having a



branch with which the nose portion is capable of engaging when the actuating rod is rotated in a direction for actuating the latch, and an abutment for preventing the rotation of the nose portion after a given angular displacement of the actuating rod in a direction opposed to said direction for actuating the latch.

4,363,507

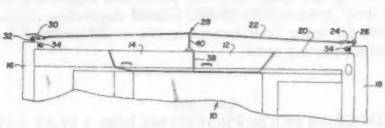
AUTO BODY PROTECTOR

Marvin J. Bays, P.O. Box 1104, Richardson, Tex. 75080

Filed Oct. 23, 1980, Ser. No. 199,960

Int. Cl.³ B60R *19/00, 27/00;* E04H *17/00*

U.S. Cl. 293—128 **3 Claims**



1. Apparatus for protecting the finish of the side of a vehicle having a door along the side of said vehicle comprising: a wire rope; means detachably securing first end of said wire rope to an end of the vehicle; tensioning means detachably securing a second end of said wire rope to the other end of the vehicle said tensioning means adapted to pull the wire rope tight when secured to the vehicle; a center post having an outwardly extending post member rigidly secured to an angle member; a rubber cover formed about said angle member forming a shoulder adjacent to said angle member and a protective surface on the inside of said angle member such that the shoulder is engaged by said door when closed trapping the cover and the angle between the door and the door opening such that the post member extends outwardly from the vehicle, the center post member having a passage formed through in the outer end through which the wire rope passes to space the wire rope from the side of said rope.

4,363,508

ANIMAL WASTE COLLECTION APPARATUS

Jesse C. Duke, 2773 The Fontainebleau, Atlanta, Ga. 30331

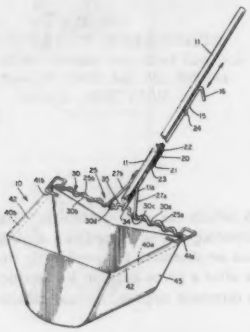
Filed Feb. 25, 1981, Ser. No. 237,886

Int. Cl.³ A01K *29/00*

U.S. Cl. 294—1 BB **10 Claims**

1. An animal waste collection apparatus comprising:

a handle with an upper part and a lower part, said upper part to be held by the operator of the apparatus;
a frame connected to said lower part of said handle;
hinge means pivotably connected to said frame;
a plurality of supporting arms attached to said hinge means and extending outwardly therefrom, said supporting arms being capable of assuming either a first position or a depending second position;
removable disposable waste containment means slidably receivable on said supporting arms and including a portion to be retained between said supporting arms and said



frame when said supporting arms assume said first position;
release means operatively engaging and retaining said hinge means when said supporting arms are in said first position; and
activation means selectably operative to release said release means from engagement with said hinge means, thereby allowing said hinge means to pivot, said supporting arms to drop downwardly to said second depending position, and said waste containment means to be removed from said supporting arms.

4,363,509

CHAIN GRAB HOOK PROVIDING FOR A FLAT LAY CROSS-OVER LINK

Kenneth D. Schreyer, Clarence, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.

Continuation of Ser. No. 121,588, Feb. 14, 1980, abandoned, which is a continuation of Ser. No. 901,142, Apr. 28, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 232,845

Int. Cl.³ B66C *1/34*

U.S. Cl. 294—82 R **1 Claim**

1. A chain grab hook for suspending a load, which comprises:
a hook body including a shank having an eye by means of which the hook is suspended in vertical attitude, a bight integrally joined with said shank and a free end portion integrally joined with said bight; said shank, bight and free end portion lying in a common plane generally forming a C-shape to define a throat;
said free end portion having a substantially flat upwardly facing support surface defining the lower side of said throat and said free end portion having generally vertically extending depression in its opposite sides whereby said support surface in plan view presents a widthwise elongate support surface portion at the innermost end of said throat and a narrowed portion of reduced width, said elongate surface portion supporting the barrel portion of a chain link received in said throat and the width of said narrowed portion being such as to receive bight portions of adjacent chain links;
said shank overlying said support surface to define the upper side of said throat and having downwardly and laterally outwardly facing abutment surfaces on opposite sides thereof to engage the bight of one of said adjacent links to thereby force such bight also against an edge of said narrowed portion when the other of said adjacent links has a load suspended therefrom; and
said depressions being laterally offset from said eye whereby the hook is both rotated in its vertical plane and tilted to one side relative thereto when the chain supports a load.

4,363,510

COVER FOR PASSENGER CAR TRUNKS

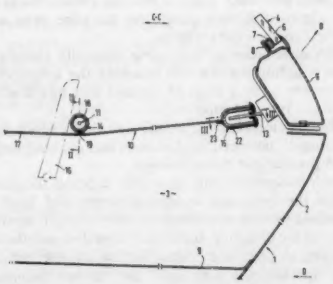
Hermann Burst, Rutesheim, and Leo Macho, Hemmingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche A.G., Stuttgart, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,856

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941018

Int. Cl.³ B60R *5/04*

U.S. Cl. 296—37.16 **9 Claims**



1. A cover arrangement for passenger car trunks that are accessible, through a rear lid that is movable about a horizontal hinge axis, comprising a cover formed of an elastic material and means for attaching the cover to a trunk body portion and to the rear lid, characterized in that said attachment means comprises elastic members for fastening the cover, said elastic members being spaced from each other on the cover and being located in hollow elements that are connected to the cover and extend perpendicularly to a vehicle longitudinal axis, wherein the elastic member in one of said hollow elements fastens the cover to opposite lateral walls of the body and elastic members in another of the hollow elements fastens the cover to the lid.

4,363,511

BEARING FOR A SUN VISOR FOR A VEHICLE HAVING A MIRROR ILLUMINATED BY AN ELECTRIC SOURCE OF LIGHT

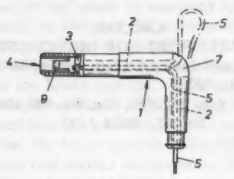
Lothar Viertel, Saarlouis; Klaus-Peter Kaiser, Wermelskirchen, and Manfred Nowak, Solingen, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 166,804

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932302

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 K **20 Claims**



1. Mounting pin means for a sun visor for an automotive vehicle, wherein the sun visor includes an electrified light source in the body of the sun visor; the sun visor having swivel bearing means;

the swivel bearing means including a mounting pin connected to the body of the sun visor and around which the visor body is swivelable for defining the swivel bearing means there; the mounting pin being for connecting the sun visor body to the body of an automotive vehicle; the mounting pin being hollow and being comprised of electrically non-conductive material;

the swivel bearing means further including an electric conductor guided through the hollow of the mounting pin,

the mounting pin including an end portion thereof at the sun visor body; an electric switch contact receptacle being defined in the mounting pin end portion;

a first electric switch contact being supported in the receptacle and being electrically connected with the conductor; the receptacle and the first switch contact are respectively so shaped that the first switch contact is prevented from swiveling in and with respect to the receptacle;

a second electric switch contact being supported on the visor body at the swivel bearing means; the second electric switch contact being electrically connected with the light source; and the first and second electric switch contacts being so shaped and positioned that at one swivel position of the visor body, the contacts engage, and at another swivel position of the visor body, the contacts disengage.

4,363,512

AUXILIARY VISOR

Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 31,549, Apr. 19, 1979, Pat. No. 4,275,917. This application Dec. 15, 1980, Ser. No. 216,077

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

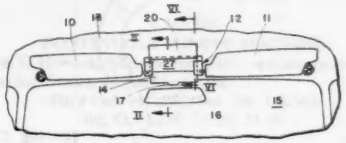
Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 G **1 Claim**

1. An auxiliary visor for a vehicle having a pair of sun visors supported at opposite sides and above the vehicle windshield and a rearview mirror mounted between the sun visors, said visor comprising:

a mounting member adapted to be mounted to said vehicle above the windshield and centrally between the vehicle's visors; and

a unitary shield supported by said member for movement with respect to said mounting member from a stored position above the windshield between the vehicle's visors to an operating position extended from said mounting member and between the rearview mirror and the windshield and in which said unitary shield covers the area of the windshield near the top thereof and between the visors and above the rearview mirror, said shield being shaped to



extend substantially to the edge of the existing visors and to the rearview mirror to substantially fill in the gap left between the visors and above the rearview mirror when in the lowered sun blocking position, said shield being located between the rearview mirror and the windshield when in the lowered sun blocking position permitting easy access to and adjustment of the rearview mirror.

4,363,513

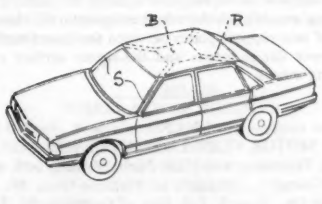
AUTOMOBILE PROTECTING SUN SHADE

Raphael Sahar, 39 Ahuzath Kinnereth, Tiberias, Israel

Filed Oct. 2, 1979, Ser. No. 81,130

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—140 **8 Claims**



1. In an automobile—an installation which comprises a casing affixed to the car's roof at its inside,

four curtains to be contained in such casing, one for the windshield, two oppositely disposed ones for the sides of the car, and one for the rear window,

the said curtains being provided with guiding members for their lateral edges,

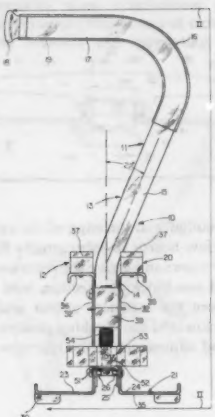
which guiding means travel in rails extending within the car along members supporting the roof of the car,

pull ropes being attached to said curtains for moving them relative to the said casing, said pull-ropes being connected to springs at one end thereof, and

drive means connected to the other end of each said pull-rope and being provided for moving the curtains, which drive means are operable from the interior of the car,

said drive means including electrical motor means to simultaneously drive a plurality of said curtains, and means to selectively disconnect said drive means for one or more of said plurality of curtains, so that said electric motor acts on a lesser number of said curtains.

4,363,514
CARRIER FOR SKATES
Richard J. Buffum, 50 Carver Dr., Magalia, Calif. 95954
Filed Aug. 18, 1980, Ser. No. 178,999
Int. Cl.³ B65D 71/00
U.S. Cl. 294—162 7 Claims

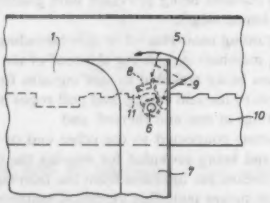


1. A carrier for supporting a pair of shoe type roller skates for carrying the same in a side-by-side horizontal relationship wherein each skate includes a pair of spaced support plates, said carrier comprising:

an elongated support member having an upper handle portion and a downwardly extending bottom portion;

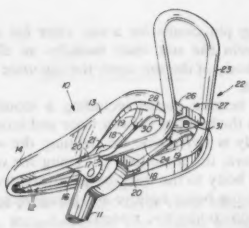
skate retaining means fixedly secured to the bottom portion for retaining a pair of skates thereon in a side-by-side horizontal relationship, said retaining means including upper flange means adapted to abut against the underside of one of said support plates of each skate and adjusting means adapted to be movable against the other of said support plates of each skate to thereby securely clamp said other of said support plates between the lower surface of said upper flange means and the upper surface of said adjusting means.

4,363,515
MOTOR VEHICLE SLIDING TOP
Alfons Lutz, Emmering, and Hans Jardin, Inning, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH and Co., Munich, Fed. Rep. of Germany
Filed Oct. 6, 1980, Ser. No. 194,228
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 2940565
Int. Cl.³ B60J 7/10
U.S. Cl. 296—222 6 Claims



1. A motor vehicle sliding roof comprising a rigid sliding cover for closing an opening in the roof in a closed position, and mounted for dropping out of said opening and sliding under a fixed rear portion of the roof, said sliding cover being provided with protection means for preventing the unintentional shifting of the cover toward said closed position under the effect of high inertial forces, such as occur in a crash, wherein a rear edge of the sliding cover is connected to a shifting yoke by erecting levers, said protection means comprising the erecting levers and one or more stabilizing levers mounted between the erecting levers in the vicinity of the vehicle longitudinal median plane, and pivoted at one end on the rear portion of the sliding cover and an opposite end on said shifting yoke, whereby unintentional sliding motion of the sliding cover related to bending of said shifting yoke is prevented.

4,363,516
THRUST SUPPORT FOR BICYCLE SEATS
Douglas E. Braly, and James A. Stein, both of 1875 E. Kirkland La., Tempe, Ariz. 85281
Filed Aug. 21, 1980, Ser. No. 180,100
Int. Cl.³ B62J 1/00
U.S. Cl. 297—195 5 Claims



1. A thrust support for attachment to a conventional cycle seat comprising:

a U-shaped member having a pair of spaced legs interconnected at one end by a bight,

said member comprising a hollow tubular configuration bent along its length to cause the free end of its legs to extend laterally therefrom in a common direction,

means secured to and extending between the legs of said member,

said means detachably engaging the back edge of the seat for limiting relative motion between the seat and the thrust support, and

the free ends of each of said legs being cut away to form concave configurations along a given part of their lengths which surround a part of a tubular frame of the seat when the thrust support is clamped in position.

4,363,517
PORTABLE BACK REST
Janet Scott, 18502 Haas Ave., Torrance, Calif. 90504
Filed Apr. 6, 1981, Ser. No. 251,355
Int. Cl.³ A47C 1/024, 1/14
U.S. Cl. 297—377 4 Claims

1. An elongate horizontal head and back support structure

with front and rear ends and engageable on and within substantially horizontal sand and turf planes with top surfaces; said support structure includes an elongate upwardly and rearwardly inclined panel with a substantially flat forwardly and upwardly disposed head and back engaging front surface, substantially longitudially extending sides, substantially horizontal laterally extending ends and a releasable coupling part at the rear of the panel positioned substantially midway between the sides and ends thereof; an elongate substantially T-shaped strut comprising an elongate, longitudinally extending normally forwardly and upwardly inclined post with an upper forward end releasably engaged with said coupling part of the panel and a lower rear end to occur adjacent the top surface of a related sand or turf plane in rearward spaced relationship from said panel, an elongate flat transversely extending foot with an upper central portion joined with the lower rear end of the post, a horizontal transversely extending lower edge spaced below the lower rear end of the post, a flat normally rearwardly and downwardly disposed rear surface and opposite ends spaced laterally outward from the central longitudinal axis of the post, the lower portion of the foot defined by said lower edge and rear surface occurs below the lower rear end of the post to penetrate and establish anchored engagement in a sand or turf plane with which the support is related.

4,363,518
METHOD AND APPARATUS FOR FRACTURING ROCK BEDS

Joji Nakamura, Kamakura, and Shigetake Akanuma, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

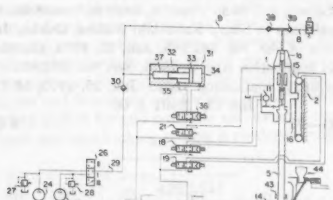
PCT No. PCT/JP79/00299, § 371 Date Nov. 13, 1980, § 102(e) Date Sep. 16, 1980, PCT Pub. No. WO80/01931, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1979, Ser. No. 209,704

Claims priority, application Japan, Mar. 13, 1979, 54-28210; Sep. 28, 1979, 54-123793; Sep. 28, 1979, 54-133269

Int. Cl.³ E21C *37/12*

U.S. Cl. 299—14 **11 Claims**



1. A preliminary fracturing method of a rock bed, comprising the steps of:

(a) drilling a hole in said rock bed to be fractured by means of a drilling rod, said drilling rod having a bit mounted thereon at the leading end thereof and a passage formed therein along the entire length of said rod, said bit having a slanted surface formed at an intermediate portion thereof and said passage leading to a nozzle formed in said bit;

(b) dumping a powder material such as rock muck or sand in the drilled hole with said drilling rod remaining inserted in the hole thereby allowing the powder material to accumulate on the slanted surface of said bit;

(c) causing a vibration to said drilling rod thereby tightly sealing a leading end portion of the hole by the powder material by consolidating the powder material accumulated on the slanted surface of said bit, said leading end portion including said nozzle;

(d) spouting a high viscosity fluid from said nozzle thereby allowing said high viscosity fluid to intrude into cracks existing in said rock bed and clogging them; and

(e) spouting a highly pressurized high viscosity fluid from said nozzle thereby expanding said cracks or seams and producing a lot of new cracks in said rock bed.

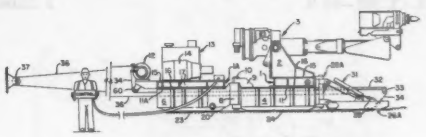
4,363,519
CONTINUOUS MINING MACHINE

Thomas E. Howard, Wheatbridge, Colo., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 14, 1980, Ser. No. 196,513

Int. Cl.³ E21C *29/00, 33/00*

U.S. Cl. 299—31 **11 Claims**



1. A mining machine for underground mining in relatively hard rock formations, comprising a first section supporting a mining implement capable of breaking ore from the solid, said first section having a first deck supported on first side beam members on each side of the machine and having ground engaging skid surfaces, and a second section supporting a source of power for said mining implement, said second section having a second deck supported on second side beam members on each side of the machine and having ground engaging skid surfaces, said first and second side beam members on the respective same side of the machine being substantially alignable with each other and said first and second sections being detachably joined to each other by a pivot mounted near each side of said machine, support means associated with said first deck for supporting the mining implement on said first deck and means for moving along the ground at least one of said first and second sections.

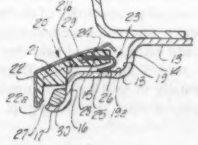
4,363,520
WHEEL COVER RETENTION

James Connell, Bloomfield Hill, Mich., assignor to J. Connell Associates, Bloomfield Hills, Mich.

Filed May 6, 1980, Ser. No. 147,421

Int. Cl.³ B60B *7/06*

U.S. Cl. 301—37 P **9 Claims**



1. A wheel trim adapted for attachment to an annular axial flange of a vehicle wheel having an annular safety hump and an annular channel in the radially opposite outer and inner surfaces respectively of the flange, said cover having a plurality of circumferentially spaced spring clips secured thereto, alternate clips comprising a first set thereof, each clip of said first set having retention means including a sharp barb and means for resiliently urging said barb into biting engagement with said flange to effect said attachment, the clips alternating with the

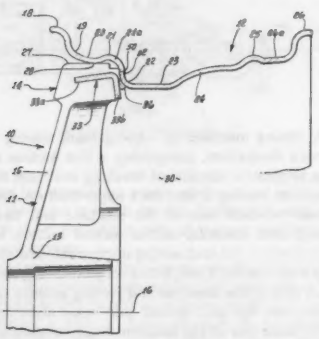
clips of said first set comprising a second set, and means to facilitate the attachment of said cover in coaxial alignment with said wheel comprising resilient locating means of each clip of the second set adapted to seat in said annular channel adjacent the latter's axially outer sidewall with radially outwardly directed spring force without biting into said channel when in said alignment and also to slide axially outwardly from said channel and along said flange without biting thereunto when said trim is forced from said wheel.

4,363,521

WHEEL DISC OFFSET ATTACHMENT TO WHEEL RIM

Joel C. Bonniwell, Hawthorne, and William A. Ocheltree, Van Nuys, both of Calif., assignors to Cragar Industries Inc., Compton, Calif.

Filed Aug. 7, 1980, Ser. No. 176,083
Int. Cl.³ B60B *23/00*
U.S. Cl. 301—63 R **9 Claims**



1. In combination with a metallic wheel rim adapted to mount a tire, the rim having an inboard hump, a well portion, an outboard hump, an outboard bead seat portion at the outboard side of the outboard hump, and an annular wall between said well portion and said outboard hump,

(a) a wheel body having a radially thickened annular outer portion extending about an axis defined by the body,

(b) said body outer portion having a first annularly extending surface which faces radially outwardly and locally interfits a radially innermost crest of said outboard hump and beadseat portion at the radially inner side thereof,

(c) generally L-shaped insert means on said body outer portion and attached to said rim proximate said annular wall thereof and proximate a bend defined by the L-shape,

(d) said body also having a second annularly extending surface which faces generally axially and locally interfits said rim annular wall, said second surface located proximate to and radially outwardly of the bend defined by said L-shaped insert, said thickened annular portion confined at the outboard hump side of said rim annular wall,

(e) said insert means axially offset from said annular wall radially inwardly of said second annularly extending surface to provide a weld receiving gap.

4,363,522

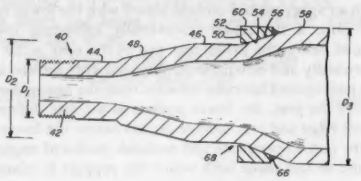
SPINDLE FOR HEAVY DUTY TRUCK OR TRAILER AXLE

John Palovcik, Kenton, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 62,712, Aug. 1, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,956
Int. Cl.³ B60B *35/00*
U.S. Cl. 301—131 **7 Claims**

1. An improved spindle for a heavy duty truck or trailer axle of the type which includes support for a wheel to be mounted thereon at a pair of axially disposed, independently mounted inner and outer tapered-roller bearings for rotation about an axis of said spindle; said spindle being tubular and having a cylindrical end portion having a first diameter for receiving said outer tapered-roller bearing thereon, a cylindrical intermediate portion having a second diameter for receiving said inner tapered-roller bearing thereon, and a major portion having transverse dimensions larger than said second diameter; wherein the improvement comprises:

a first transition portion between said intermediate portion and said major portion having an outer surface which is frusto-conical and free of any abrupt transition thereof which could produce a concentration of force stresses in said tubular spindle;



a collar having a frusto-conical inner surface and being fixedly mounted on said first transition portion to locate a transverse surface thereon adjacent said intermediate portion which said transverse surface acts as a bearing stop for said inner tapered-roller bearing; and

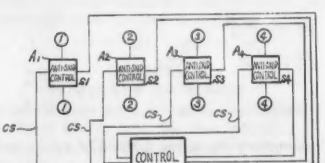
said collar being fixedly secured to said first transition portion at a region thereon which is axially remote from said intermediate portion to prevent said inner tapered-roller bearing from being capable of producing said concentration of force stresses in said tubular spindle at a location between said intermediate portion and said first transition portion.

4,363,523

ANTI-SKID CONTROLLER SYSTEM

Horoaki Mattori, and Iwao Tateishi, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 482,998, Jun. 25, 1974, abandoned. This application Apr. 3, 1978, Ser. No. 892,951
Claims priority, application Japan, Jun. 25, 1973, 48-71520
Int. Cl.³ B60T *8/00*
U.S. Cl. 303—92 **9 Claims**



1. An anti-skid brake controller system useful for vehicles employing a plurality of anti-skid brake controllers, said system comprising; means for providing state signals representing normal and abnormal operating states of the individual anti-skid brake controllers;

means for classifying the respective combinations of the normal and abnormal state signals into at least two groups, a first group defining dangerous braking conditions and a second group defining safe braking conditions;

means for controlling the operational conditions of said anti-skid brake controllers in accordance with said classifi-

cation by said classifying means to preclude the occurrence of said dangerous braking conditions;

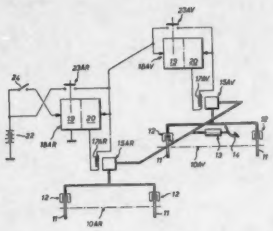
wherein said safe braking conditions include combinations of abnormal state signals of respective various anti-skid controllers which, collectively with the then existing normal state signals of the respective remaining anti-skid controllers, do not constitute dangerous braking conditions in the anti-skid mode of said brake controller system.

4,363,524

BRAKING SYSTEM WITH ANTI-LOCK CIRCUIT

Pierre Grunberg, Paris, France, assignor to Valeo, Paris, France

Filed Sep. 30, 1980, Ser. No. 192,379
Claims priority, application France, Oct. 2, 1979, 79 24463
Int. Cl.³ B60T *17/18*
U.S. Cl. 303—92 **1 Claim**



1. A braking system for a motor vehicle having at least one front axle and at least one rear axle, said braking system comprising a front axle servo control valve and a rear axle servo control valve associated with at least one wheel of the respective axles, a front axle anti-locking circuit and a rear axle anti-locking circuit respectively connected to said front wheel servo control valve and to said rear wheel servo control valve for actuating the same, each of said anti-locking circuits comprising monitoring means and control means, a safety switch operated by each of said anti-locking circuit montoring means for controlling the power supply to the associated one of said control means, said safety switch for said front axle anti-locking circuit being remote from said power supply relative to said rear axle anti-locking circuit, whereby said safety switch for said rear axle anti-locking circuit may remain closed and said rear axle anti-locking circuit operative in case said safety switch for said front axle anti-locking circuit opens, but when said safety switch for said rear axle anti-locking circuit is open said front axle anti-locking circuit is rendered inoperative.

4,363,525

MAGNETICALLY SUSPENDED ROTATING BODIES

Pierre Poubeau, Yvelines, France, assignor to Societe Nationale Industrielle Aerospatiale, France

Continuation-in-part of Ser. No. 929,077, Jul. 28, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,259
Claims priority, application France, Aug. 3, 1977, 77 23981
Int. Cl.³ F16C *39/06*
U.S. Cl. 308—10 **10 Claims**

1. A magnetically suspended rotary body having momentum wheel configuration comprising

a stator;

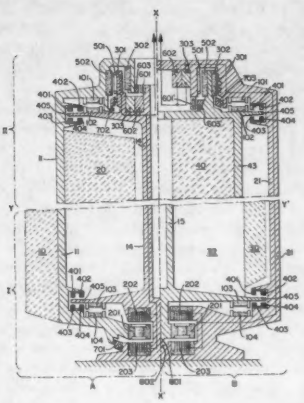
a rotor having a rotation shaft mounted for support relative to said stator;

emergency support systems located at the axial ends of said rotation shaft;

a velocity sensor having a magnetic core and an adjacent winding for sensing the axial velocity of said rotor in relation to said stator, said core and said winding adjacently mounted with one of them mounted on said rotor and the other mounted on said stator;

passive radial magnetic centering means formed by coaxial magnet cores with alternating axial magnetic fields mounted on the axial ends of said rotor and coaxial magnetic cores rigidly connected to said stator adjacent said cores on said rotor;

an active axial magnetic centering means having a magnetic core mounted on said rotor disposed opposite a coil fast to said stator receiving correction signals from said axial velocity sensor, said last-mentioned magnetic core and coil positioned at an axial end of said rotor in the immediate vicinity of said passive radial magnetic centering means;



a drive motor mounted on the axial ends of said rotor and said stator;

a motor switching detector connected to said motor and positioned near said motor at the axial ends of said rotation shaft;

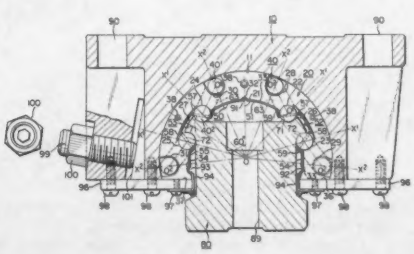
and said rotor having an inertial element formed with a peripheral mass in an axial central zone between axial ends of said rotor and external to a periphery of said rotor.

4,363,526

LINEAR MOTION BALL BEARING UNIT

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan (158)

Filed Jan. 26, 1981, Ser. No. 228,128
Claims priority, application Japan, Feb. 6, 1980, 55-012841[U]
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **1 Claim**



1. A linear motion ball bearing unit including a bearing assembly reciprocatingly movable along a track shaft through rolling ball bearings and having a casing, a cylindrical race

sleeve fitted in said casing, end lids and a retainer, characterized in that:

said casing being formed substantially in a rectangular shape and having a tunnel-like axial cavity open on the bottom side thereof;

said race sleeve having the outer periphery thereof formed in conformity with the inner periphery of said tunnel-like cavity of said casing and provided on the inner periphery thereof with U-shaped axial channels at symmetrical positions on opposite sides of and at an angle of about 60° with a vertical line through the longitudinal axis thereof, said U-shaped channels each having a pair of concave longitudinal load carrying ball raceways substantially of the same curvature as said ball bearings, and on the outer periphery thereof with U-shaped non-load carrying ball grooves of a depth slightly larger than the diameter of said ball, said sleeve further having on the inner periphery thereof a number of longitudinal grooves for location of said retainer;

said retainer having generally arcuate wall portions, longitudinal ribs in alignment with said locating grooves of said sleeve and trapezoidally folded side wall portions each with an arcuate top wall and a pair of slits formed in the opposing side walls in a width slightly smaller than the diameter of said balls, each slit having guide tongues integrally formed at the opposite ends thereof;

said end lids being fixedly attached to opposite end faces of said race sleeve and each being provided with a U-shaped turn groove continuously to a load carrying ball raceway and a non-load carrying ball groove of said sleeve;

the bearing assembly constituted by said sleeve and said retainer having the respective load-carrying and non-load carrying ball grooves filled with a plural number of ball bearings and mounted on said track shaft with longitudinal raceway grooves substantially of the same curvature as said ball bearings.

4,363,527

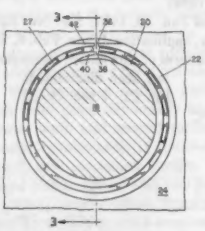
SPLIT RACE BEARING

Howard Thrasher, 5430 Crebs, Tarzana, Calif. 91356

Filed Dec. 29, 1980, Ser. No. 220,863

Int. Cl.³ F16C *27/04*

U.S. Cl. 308—184 R **11 Claims**



5. In combination:

a ball bearing set having a split outer race with a segment removed therefrom to divide the circumference of said outer race to form a gap, an inner race, and a plurality of ball bearings positioned between said races to cross the gap produced by said removed segment;

the outer radius of said outer race being diminished across its full axial dimension in the region of said gap to form a first set of opposing cantilevered spring ends, whereby torque pulses, produced by said ball bearings as they cross said gap, are reduced.

4,363,528

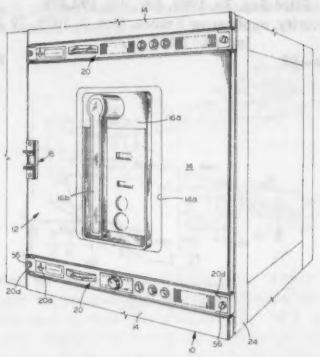
SWITCHBOARD CUBICLE DOOR HINGE AND LATCH ARRANGEMENT

William F. Olashaw, Plainville; James H. Postlethwait, Weatogue, and Jeffrey L. Winterstein, Burlington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,057

Int. Cl.³ A47B *81/00*; E05C *7/00*; E05D *7/08*

U.S. Cl. 312—292 **9 Claims**



1. In an electrical switchboard vertical section comprising a vertical array of cubicles accommodating electrical equipment; the arrangement including, in combination:

a plurality of doors, one for each cubicle;

upper and lower hinge pins assembled to each said door in vertical alignment adjacent corresponding upper and lower corners thereof;

upper and lower hinge blocks for each cubicle assembled to the switchboard in vertical alignment, each said hinge block including a pair of vertically aligned upwardly and downwardly opening sockets for accommodating said hinge pins, adjacent upper and lower hinge pins of each vertically adjacent pair of said doors being received in said downwardly opening and upwardly opening sockets, respectively, of one of said hinge blocks, whereby to mount said doors for swinging movement between open and closed positions;

a latch assembly mounted to each said door, each said assembly including a pair of vertically aligned upwardly and downwardly extending latch rods having terminations respectively projectable beyond upper and lower door edges, and a manual operator for selectively retracting said latch rod pair;

a plurality of latch blocks assembled to the switchboard in common vertical alignment and respective, individual alignment with each said hinge block, each said latch block including a pair of vertically aligned upwardly and downwardly opening notches, adjacent upwardly and downwardly extending latch rod terminations of each vertically adjacent pair of said doors being respectively, retractably received in said downwardly and upwardly opening notches of one of said blocks, whereby to releasably latch said doors in their closed positions; and

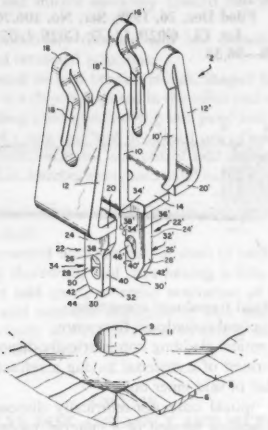
partition members mounted by at least one horizontally aligned pair of said hinge and latch blocks to define an instrument compartment at a location intermediate vertically adjacent doors.

4,363,529

TERMINAL HAVING IMPROVED MOUNTING MEANS

Winfield W. Loose, Linglestown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1980, Ser. No. 172,109
Int. Cl.³ H05K *1/00*
U.S. Cl. 339—17 C **12 Claims**



1. A stamped and formed sheet metal terminal device of the type intended for mounting in a circular hole in a panel-like member such as a circuit board, said device having improved mounting leg means intended for reception in said circuit board hole, said mounting leg means being characterized in that:

said mounting leg means comprises first and second side-by-side coextensive mounting legs extending from said terminal device and having free ends which are remote from said terminal device,

said legs having retaining portions which extend from said device partially along the lengths of said legs, said retaining portions having a width which is sufficient to establish an interference fit in the smallest circuit board hole for which said device is intended,

said legs having reduced width portions between said retaining portions and said free ends and extending to said free ends,

camming means on said reduced width portions, said camming means being cooperable with portions of said circuit board hole to cause movement of said legs away from each other during movement of said legs into said circuit board hole whereby,

said legs can be readily inserted into said circuit board hole by virtue of said reduced width portions, and during movement of said legs into said circuit board hole, said legs will be moved away from each other by said camming means and said retaining portions will establish an interference fit in said circuit board hole and retain said device on said circuit board.

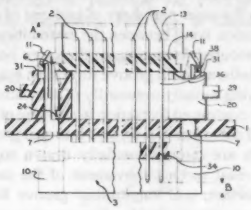
4,363,530

SPACER ELEMENT FOR USE IN AN ELECTRICAL CONNECTOR APPARATUS

Laurentius M. Verhoeven, Zijtaart, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1980, Ser. No. 221,885
Claims priority, application Netherlands, Jan. 22, 1980, 8000394
Int. Cl.³ H01R *9/09, 25/06*
U.S. Cl. 339—17 C **3 Claims**

1. In an electrical connector apparatus having first and second connectors, each containing multiple pin receiving channels, one connector on each side of and spaced apart from a circuit board containing pin receiving channels, said connectors and circuit board all electrically connected by a multiplicity of connector pins passing through the pin receiving channels in the connectors and the circuit board, a pair of mounting pegs supporting said first and second connectors and extending through openings in said connectors and circuit board, the improvement comprising positioning a cylindrically shaped spacer element on each mounting peg between said circuit



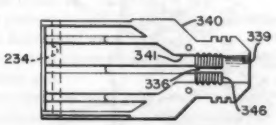
board and the second connector which is movable with respect to said circuit board, said spacer element having two ends, one facing the second connector and the other facing the circuit board, the spacer having a helically extending edge over about half the circumference of the end facing the second connector, said edge cooperating with cam like projections on the second connector to provide movement between the second connector and said circuit board in response to rotation of said spacer element.

4,363,531

ELECTRICAL JACK AND PATCH CORD ASSEMBLIES

Jesse F. Lancaster, Great Falls, Va., assignor to Dynatech Laboratories, Incorporated, Alexandria, Va.

Division of Ser. No. 955,233, Oct. 27, 1978, Pat. No. 4,256,936, which is a continuation-in-part of Ser. No. 650,019, Jan. 18, 1976, Pat. No. 4,140,918, which is a continuation-in-part of Ser. No. 420,584, Nov. 30, 1973, abandoned. This application Dec. 5, 1980, Ser. No. 213,630
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—107 **2 Claims**



1. A patch cord comprising a plural-conductor cable and a plug, said cable having a plurality of conductors and a plastic deformable sheath circumferentially surrounding said conductors, said plug having (a) a hollow exterior insulating body and (b) a plurality of contact elements mounted in an interior space of said body and connected to the conductors of said cable, said body having a cable-receiving collar portion at one end thereof, said cable extending through said collar portion and into said interior space, said collar portion circumferentially surrounding said cable, and at least said collar portion being longitudinally divided into separately formed complementary shells, means for circumferentially drawing said shells together and for fixing said shells together at positions where said shells abut against each other along a plane containing the longitudinal axis of said collar portion, internal arcuately contoured formations formed on the inner peripheries of said shells, each of said formations partially circumferentially surrounding the cable sheath, and each of said formations having a serrated configuration in longitudinal cross section to form alternate crests and valleys, the crests in each of said formations having

a common diameter which is less than the outer diameter of said cable to grip said cable and to cause the sheath of said cable to deform into the valleys of said internal formations as said shells are circumferentially drawn together for anchoring said cable against forces tending to pull the cable out of said plug, said shells abutting against each other along regions lying beyond said internal formations upon being circumferentially drawn together, and a narrow inwardly opening longitudinal groove formation formed on the inner periphery of at least one said shells and interrupting the internal arcuately contoured formation on the inner periphery of said one of said shells, said groove formation lying between the extremities of the internal arcuately contoured formation on the inner periphery of said one of said shells, and said groove formation extending radially to a region lying radially outwardly of the valleys in the internal arcuately contoured formation in said one of said shells, the sheath of said cable being deformed into said groove formation as said shells are circumferentially drawn together to said positions to resist turning movement of the cable relative to said collar portion, said longitudinal groove formation being free of any protrusions capable of penetrating said sheath upon fixing said shells together.

4,363,532

AUTOMATIC SUBSTAGE ILLUMINATION FOR MICROSCOPES

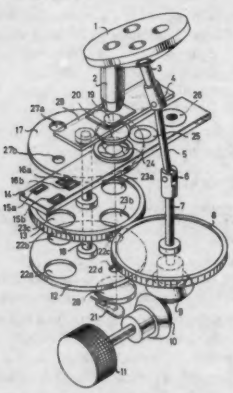
Klaus Weber, Königsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,042

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946927

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—523 **9 Claims**



1. An improved substage illumination system for microscopes of the type having a stationary condenser, a lens turret for changing objective lens, an aperture stop turret carrying aperture stops and a field stop turret carrying field stops arranged in the illumination ray path, said aperture and field stop turrets being coupled for motion with the lens turret by mechanical transmission means wherein the improvement comprises the aperture stop turret being disposed in the illumination path after the stop turret and disposed directly proximate to the rear focal plane of the condenser, and the aperture stop turret mounting an auxiliary lens for changing the focal length of the condenser in at least one position.

4,363,533

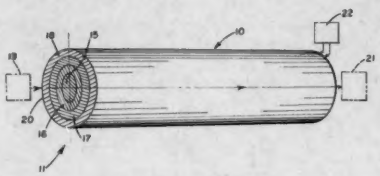
CONCENTRIC FIBER OPTICAL TRANSDUCER

David W. Stowe, Buffalo Grove, Ill.; John D. Christian, deceased, late of Warrenville, Ill.; by Albert Christian, heir; by Martha R. Christian, heir, both of Indianapolis, Ind.; by Ann L. Ziegler, heir, Danville, Ind., and by David A. Christian, heir, Indianapolis, Ind., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 26, 1979, Ser. No. 106,763

Int. Cl.³ G02B *5/172*; G02F *1/00*

U.S. Cl. 350—96.33 **25 Claims**



1. An optical transducer comprising:

an inner optical cylindrical fiber core;

an inner optical cladding concentrically disposed about said core formed of a material having a refractive index less than that of said inner core;

an outer optical core concentrically disposed about said inner cladding formed of a material having a refractive index greater than the refractive index of said inner cladding; and

an outer optical cladding concentrically disposed about said outer core formed of a material having a refractive index less than that of said outer core, the materials comprising at least one of said core and cladding elements being differently optically responsive to cause a variation in the difference between the refractive indices of said elements as a result of an acoustic vibratory force acting on said transducer, said refractive indices and the configuration of the concentric cores and claddings being preselected to define means for effecting transfer of energy from one core to the other through variations in the extension of the evanescent electric field of the light propagated in said inner core outwardly through said inner cladding into said outer core.

4,363,534

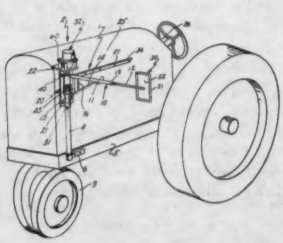
RETRACTABLE MIRROR AND LOCK THEREFOR

Stanley R. Covert, R.R. #3, 4508 Sayles Rd., Ionia, Mich. 48846

Continuation-in-part of Ser. No. 82,291, Oct. 5, 1979, Pat. No. 4,286,840. This application Mar. 9, 1981, Ser. No. 241,932

Int. Cl.³ B60R *1/06*

U.S. Cl. 350—289 **14 Claims**



1. A retractable side view mirror for vehicles, comprising:

mirror means for reflecting an image therein;

an elongate arm having said mirror means mounted on one end thereof;

bracket means adapted for connection with said vehicle, and having the other end of said arm pivotally mounted therein for rotation along a substantially horizontal path; said arm having an extended position for rear view by a driver of the vehicle, and a retracted position for folding said arm and mirror inwardly toward the body of the vehicle;

means for selectively rotating said arm between said extended and retracted positions;

a pawl mounted on said bracket means, shaped for selective reception in a detent disposed in the other end of said arm, and including means for moving said pawl into said detect to positively lock said arm in at least one of said extended and retracted positions, and out of said detent to permit arm rotation therebetween; said pawl moving means comprising:

a motor mounted on said bracket means, and having an output shaft;

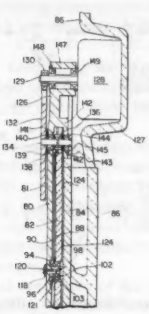
a cam connected with the output shaft of said motor and rotating therewith; said cam having a lobe positioned adjacent said pawl, whereby activation of said motor rotates said cam into engagement with said pawl, and automatically unlocks said arm by lifting said pawl out of said arm detent.

4,363,535

LIGHT VALVE DISK ASSEMBLY AND METHOD OF ASSEMBLING THE SAME

Howard E. Towlson, Baldwinsville, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Nov. 26, 1980, Ser. No. 210,587
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—361 **24 Claims**



1. A light valve, comprising:

a rotatable disk having at least one writing surface with a layer of light modulating fluid coated on said writing surface, a portion of the disk being submerged in a sump containing light modulating fluid;

apparatus for hydrodynamically isolating the light modulating fluid on said writing surface from said sump fluid to prevent sump fluid from coating said writing surface, said apparatus comprising a cover plate assembly having a cover plate portion at least partially submerged in said sump and spaced in close proximity and parallel to said writing surface of said disk to define a predetermined volume of fluid adjacent said writing surface, and said apparatus further comprising fluid conveying means communicating with said volume and furnishing fresh filtered fluid thereto to prevent any of said sump fluid from entering said volume;

drive means for rotating said disk, said drive means being mounted on said cover plate assembly; and

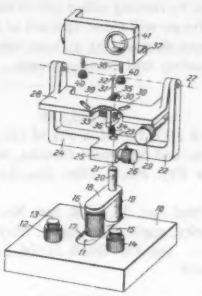
bearing means for said disk, said bearing means being mounted on said cover plate assembly.

4,363,536

INSTRUMENT BASE FOR OPTICAL DEVICES

Andreas Thaer, Leigestern; Willi Hagner, Solms; Horst Frimmel, Hermannstein, and Horst Riegel, Wetzlar-Buehlingshausen, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,229
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 7921541[U]
Int. Cl.³ A61B *3/00*
U.S. Cl. 351—245 **12 Claims**



1. An adjustable instrument base suitable for holding optical instruments, comprising:

a base plate movable along first and second horizontal coordinate directions;

a housing member surrounding said base plate, said housing member being movable with respect to said base plate in said first coordinate direction;

first and second means mounted on said housing member for effecting displacement of said base plate in said first and second coordinate directions, respectively;

a generally U-shaped stirrup member mounted on said base plate for rotation;

a support plate mounted on said stirrup member for rotation about a horizontal axis;

a first instrument carrier displaceably mounted on said support plate; and

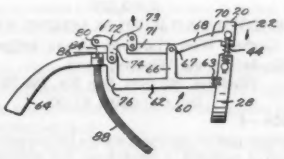
means mounted on said base plate for effecting vertical displacement of said first instrument carrier.

4,363,537

ADJUSTABLE SPECTACLES

Andrew F. Burton, 6727 - 16th St. NW., Washington, D.C. 20012

Filed May 21, 1979, Ser. No. 41,257
Int. Cl.³ G02C *7/06, 7/08, 1/08*
U.S. Cl. 351—90 **9 Claims**



1. Adjustable spectacles having a bridge portion, supportable on the nose of the wearer, comprising: an upper frame

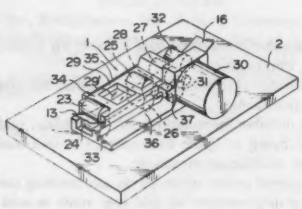
supporting a pair of bifocal lenses in horizontal alignment with the eyes of the wearer, each lens having an upper portion and a lower portion; a lower frame including said bridge portion, said bridge supporting said spectacles on the nose of the wearer; means for supporting said upper frame above said lower frame; means disposed at opposite ends of said lower frame for vertically moving said lenses in relation to said lower frame, said vertically moving means including means for sliding said bifocal lenses upward and downward between said two positions, said two positions including a downward position in which said upper portion is directly in front of the wearer's eyes and an upward position in which said lower position is directly in front of the wearer's eyes, said sliding means including an identical pair of rack and pinion disposed at said frame opposite ends and further comprising a rod connecting each said pinion and a handle connected to both ends of said rod so that by turning either one of said handles, both ends of said upper frame will move upward or downward in unison; actuation means disposed at at least one end of said lower frame for actuating said moving means.

4,363,538

DEVICE FOR HOLDING A FILM ON A FOCAL PLANE

Masazi Yokota, and Shigenori Oosaka, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 30, 1980, Ser. No. 145,241
Claims priority, application Japan, May 2, 1979, 54-54412
Int. Cl.³ G03B *21/14, 1/48*
U.S. Cl. 353—95 **8 Claims**



1. A device for holding a film on a focal place of an optical system comprising a film support plate having a standard surface parallel to the focal plane, a cushion sheet provided on and covering substantially all the standard surface of the film support plate, an aperture provided in said support plate and said cushion sheet, said cushion sheet having a soft, elastic and drafty surface and suction holes open to the surface thereof, said surface of the cushion sheet forming the focal plane of the optical system, and a suction means for sucking air through said suction holes and thereby attracting the film onto the surface of the cushion sheet with a suction force large enough to hold the film flat on the surface of the cushion sheet and small enough to allow the film to be fed in slide contact with the surface of the cushion sheet while the suction force is maintained substantially unchanged.

4,363,539

PHOTOHEAD WITH FLASHING BEAM

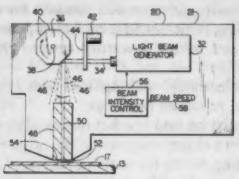
Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Scientific, Inc., South Windsor, Conn.

Filed Jul. 20, 1981, Ser. No. 284,780
Int. Cl.³ G03B *41/00*
U.S. Cl. 354—4 **38 Claims**

1. In a photoplotter having a means for supporting a sheet of photosensitive material, a photohead for directing a beam of light onto said photosensitive surface, and a means for moving said photosensitive surface and photohead relative to one another to expose lines on said photosensitive surface, a means for producing a flashing output beam of light from said photohead, said flashing output beam producing means comprising:

a light beam generator for producing a beam of light,

means providing a light accepting window,



means for periodically sweeping said beam across said light accepting window, and

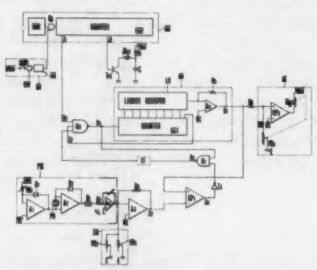
means carried by said photohead for directing light which enters said light accepting window onto said photosensitive surface as said flashing output beam.

4,363,540

EXPOSURE INFORMATION STORAGE DEVICE FOR A PHOTOGRAPHIC CAMERA

Yoshiyuki Takishima, Yokohama; Yukio Mashimo, Tokyo; Masanori Uchidoi, Yokohama; Hiroshi Aizawa, Kawasaki, all of Japan; Bernhard H. Andresen; Robert C. Martin, both of Dallas, Tex., and Stephen C. Kwan, Plano, Tex., assignors to Canon Kabushiki Kaisha, Tokyo, Japan and Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 26, 1977, Ser. No. 762,514
Claims priority, application Japan, Jan. 30, 1976, 51-519074
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—23 D **8 Claims**



1. An exposure information storage device for a camera capable of storing exposure information supplied thereto comprising:

(a) an exposure information producing means for providing an analog value corresponding to a supplied exposure information;

(b) an analog-to-digital converter means, said means including a pulse producing means for providing pulses having a predetermined period, a counter means for counting pulses from said pulse producing means, a digital-to-analog conversion means for converting the content of said counter means into an analog electrical value, a comparator means for comparing the analog value from the exposure information producing means with the analog electrical value from the digital-to-analog conversion means for producing a completion signal when both analog values assume a predetermined relation with each other, said analog-to-digital converter means being responsive to said completion signal so as to terminate the analog-to-digital conversion operation; and

(c) a control circuit coupled to the analog-to-digital con-

verter means, said circuit for controlling the analog-to-digital converter means to avoid responding to the output of the comparator means during the change of the output of the digital-to-analog conversion means caused by the counting of pulses by said counter means.

4,363,541

PHOTOGRAPHING APPARATUS

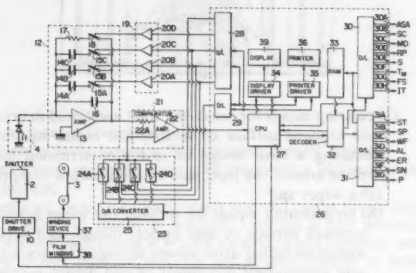
Mamoru Aihara; Yutaka Takahashi; Yoshio Nakajima, all of Hachioji, and Tsuyoshi Matsuura, Ina, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,254

Claims priority, application Japan, Oct. 5, 1979, 54/128007

Int. Cl.³ G03B *7/093*

U.S. Cl. 354—23 D **20 Claims**



1. A photographing apparatus comprising:

a photoelectric conversion circuit including a photoelectric transducer element which continuously determines the brightness of an object being photographed for producing an output signal which corresponds to the brightness of the object;

means for sequentially calculating an expected exposure period during the course of a photographing operation in response to said output signal from the photoelectric conversion circuit;

means for determining an equivalent exposure period from the initiation of the photographing operation to the instant when the expected exposure period has been determined, means for subtracting said equivalent exposure period from said expected exposure period calculated by the calculating means to derive the remainder of the exposure period in a sequential manner;

means for displaying said remainder of the exposure period during said photographing operation; and

a shutter drive circuit for opening a shutter at the initiation of the photographing operation and for closing the shutter when the remainder of the exposure period is substantially zero.

4,363,542

CAMERA AND ELECTRONIC FLASH COMBINATION

Isao Kondo, and Yukio Nakajima, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,317

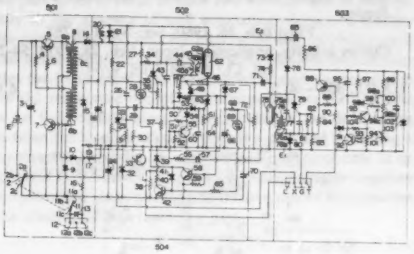
Claims priority, application Japan, Jul. 4, 1978, 53/81141; Jul. 5, 1978, 53/82323

Int. Cl.³ G03B *7/081, 15/05*

U.S. Cl. 354—31 **17 Claims**

1. A camera unit for use with an automatic electronic flash unit having a flashlight illumination control circuit, said camera unit comprising:

another flashlight illumination control circuit, and switch means connected to both said flashlight illumination control circuits for selecting which of said flashlight illumination control circuits controls said flash unit, said flash unit not having such switch means.



4,363,543

CAMERA

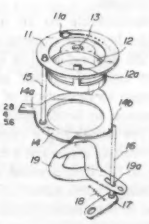
Toyotaka Yamada, No. 352-19, Shimoda, Hino City, Tokyo, and Fujio Enomoto, No. 159-1, Nagafuso Cho, Hachioji City, Tokyo, both of Japan

Filed Jan. 31, 1979, Ser. No. 8,131

Claims priority, application Japan, Feb. 2, 1978, 53-10879; Feb. 6, 1979, 54-13620[U]

Int. Cl.³ G03B *7/08, 17/18*

U.S. Cl. 354—58 **5 Claims**



1. An automatic exposure camera comprising:

an ASA plate rotatably supported on a camera lens housing and provided with a series of through holes which successively vary an opening area;

a control element for setting an iris or shutter coupled with said ASA plate to rotate with said ASA plate;

an ASA ring mounted on said camera lens housing, rotatable over a predetermined range in accordance with an ASA sensitivity of a film;

said ASA ring rotation and position being independent of the rotation and position of said ASA plate and independent of rotation and position of said control element for setting the iris or shutter; and

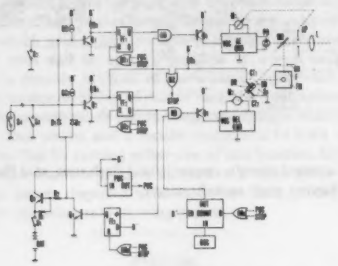
a light receiving element fixed to said ASA ring and positioned behind said through holes and in registration to said through holes to vary the light reaching said light receiving element in relation to said position of said ASA ring.

4,363,544

REMOTE RELEASABLE CAMERA

Takayuki Nemoto, Tachikawa, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,752
Claims priority, application Japan, Feb. 28, 1979, 54-22905
Int. Cl.[3] G03B *7/08, 9/64*
U.S. Cl. 354—60 R 6 Claims



1. A locally or remotely operable exposure control camera comprising:

a release button depressable to a first and then to a second position;

an automatic exposure control circuit having a photoelectric element so as to automatically control the amount of exposure in accordance with the brightness of an object to be photographed;

a photographic mechanism, a motor for driving the photographic mechanism and a motor control circuit for controlling the motor for driving the photographic mechanism;

a first switch in the camera to be closed when the release button reaches its first position to operate the automatic exposure control circuit;

a second switch in the camera to be closed when the release button reaches its second position in order to actuate the motor control circuit;

contact means contactable to an independently operable third switch outside of the camera and connected in parallel only with the second switch for actuating the automatic exposure control circuit and the motor control circuit in response to operation of the third switch;

delay means arranged to be coupled to one of the first and third switches for providing a control signal for controlling the motor control circuit at a certain time after operation of any one of the first, second and third switches, said delay means being independent of closing of the second switch after the first switch is closed following depression of the release button; and

inhibiting means coupled between the second switch and the motor control circuit for inhibiting the motor control circuit to render the motor inoperative until the control signal is provided by the delay means even when the switch is closed.

4,363,545

PHOTOGRAPHIC PIPELINE INSPECTION APPARATUS INCLUDING AN OPTICAL PORT WIPER

Edward F. Schaefer, Tulsa, Okla.; Lawrence R. Lozynski, McHenry, and Donald E. Lorenzi, Des Plaines, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Mar. 26, 1981, Ser. No. 247,766
Int. Cl.[3] G03B *37/00;* G01N *29/04*
U.S. Cl. 354—63 11 Claims

1. For the inspection of a pipeline, a device arranged to be inserted into a pipe for longitudinal movement therein, said device comprising:

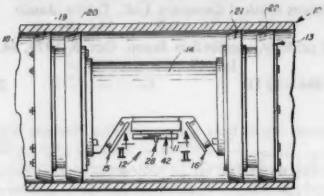
(1) photographic camera means including

(a) means defining an image area,

(b) film storage and transport means arranged for feeding film through said image area, and

(c) optical means for projecting to said image area an image of a predetermined internal surface area of the pipe, said optical means including a surface exposed to the ambient environment of the inside of the pipe,

(2) forward and rearward cup means on said device disposed forwardly and rearwardly of said camera means and arranged in general sealing arrangement with the pipe, and



(3) clearing means for removing solid and liquid debris from said exposed surface of said optical means to facilitate obtaining a clear image of said predetermined internal surface area of the pipe, said clearing means comprising

(a) a wiper and

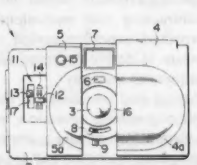
(b) an actuating means for moving the wiper across said exposed surface of said optical means, said actuating means including drive means arranged for transducing said longitudinal movement of said device within said pipe into oscillatory movement of said wiper across said exposed surface of said optical means.

4,363,546

APPARATUS FOR ESTABLISHING ROUTINE SHOT DISTANCE OF TAKING LENS IN CAMERAS

Fujio Enomoto, and Ichiro Morimoto, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,178
Claims priority, application Japan, Nov. 7, 1980, 55-156564; Nov. 7, 1980, 55-156565
Int. Cl.[3] G03B *3/02, 17/02*
U.S. Cl. 354—195 8 Claims



1. An apparatus for establishing a routine shot distance of a taking lens for a camera, comprising:

a taking lens subject to a force-and-aft movement along an optical axis in response to a distance adjustment;

a lens protective cover movable between a first position in which it covers the taking lens and a second position in which it allows the taking lens to be exposed;

relay means for moving the taking lens to a position corresponding to a selected routine shot distance in response to the opening/closing movement of the protective cover; and

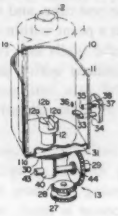
means within said relay means for changing the position of the taking lens which corresponds to the routine shot distance independently of the position of the movable lens protective cover.

4,363,547

APPARATUS FOR MOUNTING A FILM MAGAZINE INTO CAMERA

Akira Hashimoto, Hachioji, and Hitoshi Shirai, Sagamihara, both of Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Jul. 17, 1981, Ser. No. 284,461
Claims priority, application Japan, Aug. 1, 1980, 55-106505
Int. Cl.[3] G03B *1/04, 1/12, 19/04*
U.S. Cl. 354—212 27 Claims



1. Apparatus, comprising:

a camera body having a film chamber formed therein;

a magazine receiving casing for receiving a film magazine therein;

mounting means for tiltably mounting said casing in said film chamber so that it is movable between a first position wherein said casing is wholly located in said chamber and a second position wherein said casing extends at least partially outside of said camera body to permit insertion or removal of a film magazine; and

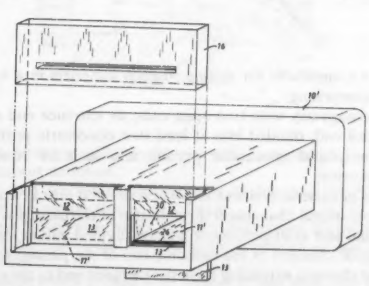
a drive shaft extending into said casing and adapted to engage a film shaft of a film magazine when a film magazine is located in said casing, said drive winding shaft tilting with said casing.

4,363,548

ARRANGEMENT FOR INTRODUCING BAND LIGHT-SENSITIVE MATERIAL INTO DEVELOPING DEVICE AND THE DEVELOPING DEVICE PROVIDED THEREWITH

Gerhard Oberhoffner; Horst Köninger, and Alfons Kastl, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 11, 1981, Ser. No. 291,931
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030428
Int. Cl.[3] G03D *3/13*
U.S. Cl. 354—298 14 Claims



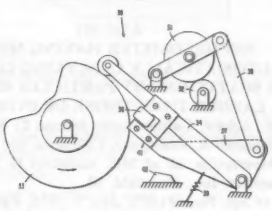
1. An arrangement for introducing a band light-sensitive material in daylight from cassettes having a guide part into a treatment station of a developing device, comprising a receiving part arranged to be located on a developing device and to light-tightly receive a guide part of cassettes; means for subdividing the interior of said receiving part and including at least one separating element insertable into the interior of said receiving part so as to form at least two compartments therein, whereby in the absence of said separating element a greater cassette can be inserted into the interior of said receiving part, whereas in the presence of said separating element two smaller cassettes can be inserted into the interior of said receiving part each in the respective one of said compartments thereof; and means for light-tightly closing the interior of the developing device from the interior of said receiving part and including a closing element provided in each of said compartments at its end adjacent to the developing device and opening in response to insertion of the guide part of a respective one of the cassettes into the interior of said receiving part.

4,363,549

ELECTROMECHANICALLY OPERATED FUSER ROLL CLOSURE

Leon C. Brown, Boulder, Colo.; Jesse L. Campbell, Tucson, Ariz.; Uscoe J. Fitts, Boulder, and Willard L. Gudgel, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,084
Int. Cl.[3] G03G *15/20*
U.S. Cl. 355—3 FU 3 Claims



1. A xerographic toner fixing apparatus comprising:

substantially parallel first and second cylindrical fuser rollers;

biasing means for maintaining the peripheral surfaces of said fuser rollers in an open position;

a rotatable cam;

means for rotating said cam;

a linkage mechanism coupling said cam to at least one of said fuser rollers, said linkage mechanism including an electromechanically operated latch and

an electrical control means for selectively energizing said electromechanically operated latch;

said linkage mechanism further including means for shifting the peripheral surfaces of said fuser rollers between open and closed positions when said electromechanically operated latch is energized and for retaining said fuser rollers in an open position when said electromechanically operated latch is deenergized.

4,363,550

RECORDING SHEET SEPARATING DEVICE IN A TRANSFER-TYPE ELECTRONIC COPYING MACHINE

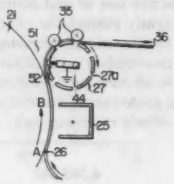
Kenshi Toshimitsu, Yokohama; Akihiro Kanazashi, Tokyo, and Mitsuaki Kohyama, Higashikurume, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 4, 1980, Ser. No. 213,076
Claims priority, application Japan, Dec. 6, 1979, 54-157449
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 TR 5 Claims

1. A separating device for use in a transfer-type copying machine for separating a recording sheet from a surface of a photosensitive member after a developed image on the surface

of the photosensitive member has been transferred to the recording sheet at an image transfer station, said separating device comprising:

(a) separating means for separating the recording sheet bearing a toner image thereon from the surface of said photosensitive member;



(b) guide means, facing said photosensitive member and having at least one opening, for supporting the separated recording sheet; and

(c) de-electrifying means, separate from said guide means, for de-electrifying said recording sheet through said opening, said guide means maintaining constant the distance between said recording sheet and said de-electrifying means.

4,363,551

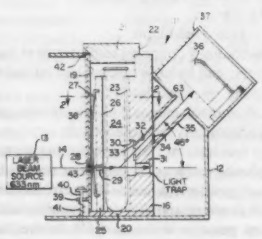
NEPHELOMETER HAVING MEANS SEMIAUTOMATICALLY CANCELING COMPONENTS FROM SCATTERING BY PARTICLES SMALLER OR LARGER THAN THOSE OF INTEREST

Eugene K. Achter, Gaithersburg; Jerome C. Kremen, Takoma Park; Rodolfo R. Rodriguez, Columbia, and Paolo Priarone, West Hyattsville, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 691,805, Jun. 1, 1976, Pat. No. 4,305,665, which is a continuation of Ser. No. 600,787, Jul. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 545,066, Jan. 29, 1975, abandoned. This application Aug. 8, 1980, Ser. No. 176,303

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—338 **1 Claim**



1. A nephelometer for assaying immunochemical complex of a sample and antigen mixture held in a conventional test tube having a right circular cylinder construction, comprising:

means for holding the tube such that its central axis is substantially vertical;

a laser light source for producing a beam of essentially monochromatic light, said beam being narrow with respect to the diameter of the tube holding the mixture, and said source being positioned to project the laser beam through the side wall of the tube such that it passes through liquid contained therein at or near the central axis of the tube, and such that the laser beam is at a substantial right angle to the central axis of the tube;

light collecting means for receiving forward scattered light, said light collecting means including a passageway and light shielding means around said passageway for shielding all but light from and about a path through the passageway and through the tube, said light shielding means comprising a pair of field stops with each of said field stops defining an opening directed to provide a scatter volume entirely within the test tube, said passageway and light shielding means being operative to substantially exclude shattered light at the tube side wall interface so as to collect the scattered light only substantially from the volume within the test tube, and said path intersecting the laser light beam at a point within the liquid in the tube and away from the tube walls and lying in a plane which is approximately coplanar with a plane containing the laser beam and the tube axis; said path intersecting the laser beam at an angle of approximately 30° with respect to the laser beam;

said holding means including a cover, and said nephelometer further including shutter means for blocking the laser beam and preventing the laser beam from reaching the tube when said cover is open, said shutter means being operable to automatically move said shutter means to a position blocking the laser beam from reaching the tube when said cover is opened; and

means for sensing the light scattered along the path defined by said light collecting means and for providing an assay output based on the sensed light.

4,363,552

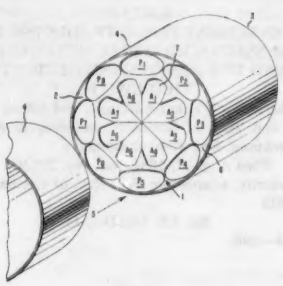
STATIC MIXER

Robert J. Considine, Clinton, Iowa, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 18, 1981, Ser. No. 243,645

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—340 **4 Claims**



1. An apparatus for mixing viscous materials in a transfer pipe comprising:

a passageway with two open ends, an entrance end and an exit end, divided into at least two concentric portions, a peripheral concentric portion and an axial concentric portion;

said peripheral concentric portion divided into at least two peripheral channels at the entrance of the passageway end and said axial concentric portion divided into at least two axial channels at the entrance end of the passageway;

said channels extending from the entrance end to the exit end such that, at the exit end, the peripheral and axial channels are arranged alternately around the longitudinal axis of said passageway;

whereby the alternating of peripheral and axial channels results in substantial cross-section homogeneity of the viscous material as it flows out of the exit end of the passageway.

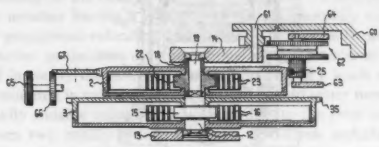
4,363,553
WATCH MECHANISM INCORPORATING TWO BARRELS

Michel Thomi, Saint-Imier, and Raymond Studer, La Chaux-de-Fonds, both of Switzerland, assignors to Compagnie des Montres Longines Francillon S.A., Saint-Imier, Switzerland

Continuation of Ser. No. 963,107, Nov. 22, 1978, abandoned, which is a continuation of Ser. No. 878,590, Feb. 16, 1978, abandoned, which is a continuation of Ser. No. 606,937, Aug. 22, 1975, abandoned. This application Oct. 24, 1979, Ser. No. 88,064

Int. Cl.³ G04B *1/10*

U.S. Cl. 368—140 **22 Claims**



1. A watch mechanism having a running time of less than 72 hours comprising a first and second driving barrel, a first and second spring respectively contained in said first and second driving barrel, said springs being connected in series, one of the ends of said first spring being positively connected to one of the ends of said second spring, the other end of one of the springs being secured to a toothed wheel which maintains, by means of a gear-train, the movement of a spring balance oscillator, the transmission ratio of the gear-train and the springs being chosen so that the angular velocity of the barrel containing the second spring is higher than 0.3 turns per hour.

4,363,554
SETTING MECHANISM FOR AN ANALOG DISPLAY WATCH

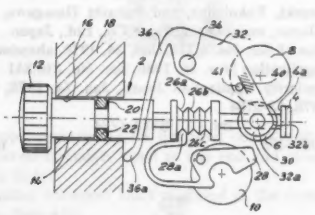
Jean-Claude Schaffner, Delemont, and Jacques Müller, Reconvilier, both of Switzerland, assignors to ETA S.A., Fabriques d'Ebauches, Switzerland

Filed Feb. 19, 1982, Ser. No. 350,138

Claims priority, application Switzerland, Feb. 26, 1981, 279/81

Int. Cl.³ G04B *27/02*

U.S. Cl. 368—190 **4 Claims**



1. A setting mechanism for a watch comprising
a support structure,
first and second toothed wheels having axes of rotation which are parallel to each other;
a stem which is movable axially in a direction perpendicular to the axes of said wheels, and rotatable about said direction;
a pinion which is fixed with respect to said stem, said pinion being coaxial with said stem,
means for holding said stem in any one of three axial positions,
an intermediate gear which is mounted about a displaceable axis; and
means for displacing said axis in response to the movement of said stem and maintaining said axis parallel to the axes of said wheels, said intermediate gear being engaged with said first wheel and free with respect to said pinion when said stem is in the first position, said intermediate gear being engaged with said pinion and remaining engaged with said first wheel when said stem is in the second position, and said intermediate gear remaining engaged with said second wheel when said stem is in the third position.

4,363,555
FLUID-TIGHT WATCH CASE WITH U-SHAPED BEZEL

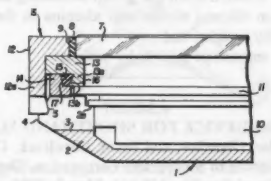
Hansjörg Finger, Lengnau, Switzerland, assignor to Firma H. Finger, Lengnau, Switzerland

Filed May 21, 1980, Ser. No. 151,826

Claims priority, application Switzerland, May 30, 1979, 5041/79

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—291 **6 Claims**



1. A fluid-tight watch, comprising:
a case;
a movement;
a dial fixed to said movement, said movement and said dial being contained in said case;
said case comprising:
a back having a peripheral wall;
an annular bezel of substantially U-shaped cross section having an inner arm, an outer arm and an annular groove bounded by said inner arm and said outer arm, said bezel being secured to said peripheral wall, said inner arm being disposed radially inwardly of said peripheral wall, said outer arm being partially spaced from said peripheral wall, said peripheral wall extending between said inner arm and said outer arm;
said inner arm comprising holding means at the free end of said inner arm for keeping said movement and said dial in place;
a glass supported by said bezel; and
an annular gasket disposed at a level between the level of said dial and the level of said glass, said gasket being located within said groove and compressed between said peripheral wall and said inner arm.

4,363,556
CONTINUOUS STRIP COLD DETECTOR

Raymond E. Belliveau, West Caldwell, and Simon J. Larkin, West Milford, both of N.J., assignors to Walter Kidde & Co., Belleville, N.J.

Filed Jan. 14, 1980, Ser. No. 111,967

Int. Cl.³ G01K *7/10, 7/20*

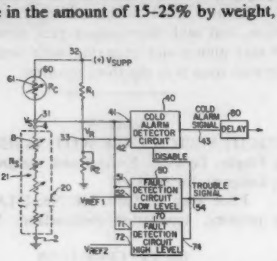
U.S. Cl. 374—183 **9 Claims**

1. A sensor for detecting cryogenic temperatures comprising a plurality of sensor sections electrically connected in series circuit relationship, each said section including:
a first uninsulated electrically conductive wire;
a second uninsulated electrically conductive wire;
a plurality of thermistor beads electrically connected in parallel across said first and said second wires at substantially equal longitudinal intervals along said first and said second wires;

each said bead having a resistance which increases with decreases in the temperature of said bead and each said bead being formed of a mixture comprising:

manganese dioxide in the amount of 60–75% by weight,

copper oxide in the amount of 15–25% by weight,



a material selected from the group consisting of magnesium aluminum silicate, zircon and alumina in the amount of 5–20% by weight, and

frit in the amount of 5–10% by weight.

4,363,557

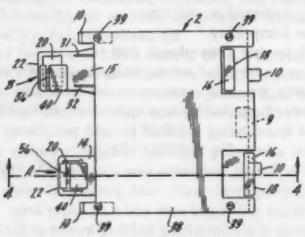
MARKING DEVICE FOR SHORTHAND MACHINE

Paul J. Fowler, Glenview, and Frank Chvojcsek, Chicago, both of Ill., assignors to Stenograph Corporation, Skokie, Ill.

Continuation of Ser. No. 148,461, May 9, 1980, abandoned, which is a continuation of Ser. No. 942,934, Sep. 18, 1978, abandoned. This application Apr. 27, 1981, Ser. No. 257,777

Int. Cl.³ B41J *3/26*

U.S. Cl. 400—91 **14 Claims**



1. A marking device for a shorthand machine comprising:

(a) a housing, said housing having

(i) a substantially flat, rectangular base plate having a longitudinal channel extending the length of the base plate,

(ii) a substantially flat, rectangular top plate complementary to the base plate and secured to the base plate, and

(iii) means maintaining said top plate and said base plate in spaced-apart relationship;

(b) an elongate key having a forward and rearward end;

(c) means for mounting said key for substantially longitudinal movement within said channel between a retracted and an advanced position;

(d) biasing means continuously urging the key toward its retracted position;

(e) means for removably mounting said housing on the shorthand machine;

(f) a marking instrument mounted adjacent the forward end of the key for movement with the key between the retracted and advanced positions; and

(g) a finger-engagement means at the rearward end of said key to facilitate manual longitudinal movement of said key between the retracted and advanced positions.

4,363,558

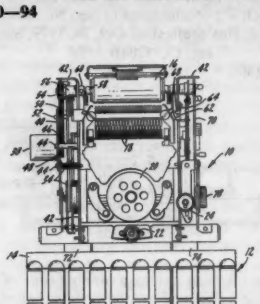
SHORTHAND MACHINE HAVING ELECTRIC PLATEN ADVANCEMENT

Richard A. Michals, Skokie; Frank H. Mozer, Hoffman Estates, and Ralph E. Zum Bahlen, Chicago, all of Ill., assignors to Stenograph Corporation, Skokie, Ill.

Filed Oct. 10, 1980, Ser. No. 195,923

Int. Cl.³ B41J *3/26*

U.S. Cl. 400—94 **19 Claims**



1. A system for electrically advancing the platen of a shorthand machine of the type having a set of keys wherein numerals, words or parts of words are generated by a stroke which comprises depressing and releasing a key or combinations of the keys, the system comprising

(a) an electric motor connected for driving the platen,

(b) means to supply electrical power to said motor for a predetermined duration of time to activate said motor to advance the platen responsive to a stroke of said keys, and

(c) means responsive to activation of said motor to apply means to brake said motor subsequent to said predetermined duration of time after completion of a stroke, thereby halting advancement of the platen.

4,363,559

PRINT WHEEL MOUNTING ASSEMBLY FOR SERIAL PRINTER

Takami Suzuki, Yokohama, and Takashi Hasegawa, Isehara, both of Japan, assignors to Ricoh Co., Ltd., Japan

Continuation of Ser. No. 6,214, Jan. 24, 1979, abandoned. This application Nov. 26, 1980, Ser. No. 210,841

Claims priority, application Japan, Jan. 24, 1978, 53-5783; Jan. 24, 1978, 53-5784

Int. Cl.³ B41J *1/24*

U.S. Cl. 400—175 **10 Claims**

1. A print wheel mounting assembly for a serial printer comprising a rotary shaft and a print wheel to be mounted on the shaft, the print wheel including a central hub, a number of spokes extending radially outwardly from the hub, and at least one type element on each spoke, said assembly comprising:

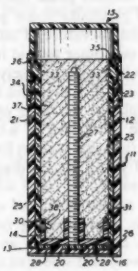
torque transmitting means operatively interconnecting the rotary shaft and the print wheel for transmitting torque from the rotary shaft to the print wheel, said torque transmitting means comprising a receiving plate secured to the shaft, and a clamp disk attached to the print wheel operatively connected to said receiving plate, locating means for positioning the print wheel in a predetermined angular position on the rotary shaft, axial positioning means for controlling the axial position of the print wheel on the shaft, said locating means and said axial positioning means being arranged in both the clamp disk and the receiving plate, said print wheel including a setter member having a cylindrical portion fixedly connected in concentric relationship to the central hub, said cylindrical portion of said setter member having a plurality of circumferentially spaced setter projections extending axially relative to said hub, each of said setter projections having elongated setter grooves disposed inwardly thereof, and further comprising a knob movably mounted in said cylindrical portion of said setter member in axially slidable relationship with respect to the print wheel between two axially spaced positions, said knob including a plurality of circumferentially spaced setter locking arms extending axially thereof, each of said setter locking arms being slidably disposed in one of said setter grooves, and said knob being attached to the central hub of said print wheel to be concentric therewith for mounting the print wheel on the rotary shaft and for detaching the print wheel from the rotary shaft.

4,363,560

PROPEL-REPEL SOLID STICK DISPENSER

Charles J. Gentile, 8 Winding Way, North Caldwell, N.J. 07006

Filed Oct. 26, 1977, Ser. No. 835,906
Int. Cl.[3] B67D *3/00*
U.S. Cl. 401—68 **10 Claims**



1. A propel-repel solid-stick dispenser comprising:

(a) an external container open at one end and closed at the opposite end;

(b) a threaded transport shaft mounted in the container for rotation therewith;

(c) a cartridge mounted within the container, the cartridge being open at the end most proximal to the open end of the container and rotatable independently of the container and the shaft;

(d) a piston threadably mounted on the shaft, the piston being translationally moveable along the shaft in response to relative rotational movement between the piston and the shaft;

(e) means for rotating the piston in response to rotation of the cartridge;

(f) means for generating relative rotational movement between the container and the cartridge, whereby the open end of the cartridge extends beyond the open end of the container thereby providing said means for simultaneously generating relative rotational movement between the container and the cartridge and between the piston and the shaft;

(g) closure means detachably engaged at the open end of the container;

(h) a bearing surface at the top of the cartridge tapering inwardly toward the open end thereof, and

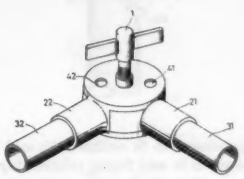
(i) a continuous resiliently outwardly expandable rib in the closure means engageable with the bearing surface at the open end of the cartridge.

4,363,561

LOCKING DEVICE FOR PERCUSSION INSTRUMENTS' STAND

C. L. Hsieh, Taipei Hsien, Taiwan, assignor to Kung Hsue She Educational Supplies Co., Ltd., Taipei Hsien, Taiwan

Filed Mar. 20, 1981, Ser. No. 245,713
Int. Cl.[3] F16C *11/00*; F16D *1/12, 3/00*
U.S. Cl. 403—92 **2 Claims**



1. A locking device applied to the pivot joint of the stands of percussion musical instruments, comprising:

a fastening screw;

a first joint portion forming the pivot joint including two opposing disc-like structures from which one arm forming one leg of the stand extends, one of which discs is centrally bored to allow said fastening screw to pass through;

a second joint portion forming the pivot joint including a hollow annular structure, from which another arm forming another leg of the stand extends, and which can be fitted in between the two said disc-like structures;

a resilient, expandable open ring nested in said annular structure with a narrow opening;

a disc-like staple nested in said open ring, with two bores, one of which is centrally and axially located at the axis of said fastening screw, and the other of which extends axially to communicate with the axially located bore;

a substantially tapering piece, which may either be formed as an integral tip of said fastening screw or as an independent element, and the size of which allows it to pass through said axially located bore of said disc-like staple;

a pin slidably positioned in said radially extending bore, one end of which is tapering and inserted into the opening of said open ring;

said disc-like staple being immovably secured to said first joint;

all the aforementioned component parts being structured and disposed so that when said fastening screw is fastened, said tapering piece will be pushed axially and inwardly and in turn urge said pin to move axially and outwardly so that its tapering end can expand said open ring, and the expanded open ring in turn press against the inner wall of said annular structure to prevent the two arms from pivotal rotation about the joint.

4,363,562

BLOCKING-TYPE KEY

Richard E. Hora, Riverside, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 13, 1981, Ser. No. 282,556
Int. Cl.[3] F16B *3/00*
U.S. Cl. 403—318 **1 Claim**

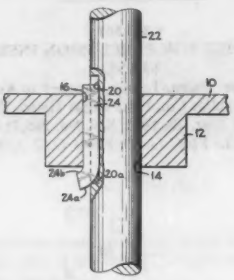
1. A rotational driving assembly, comprising

a shaft of uniform diameter having a rotational axis substan-

tially vertical and having a first keyway therein of constant rectangular cross section,

a disc member including a hub at one end to be driven and having a second keyway therein with a constant cross section similar to said first keyway and being formed to receive said shaft with said keyways in facing relationship,

a key having a substantially constant rectangular cross section dimensioned to fit within both said first and second keyways when in said facing relationship,



an abutment wall at the lower end of said first keyway,

and an outwardly curved length on said key at the lower end thereof for engagement with said abutment wall and an end of said disc member when disposed within said keyways, whereby said disc member is secured both rotationally and supported axially in place on said shaft.

4,363,563

SYSTEM FOR THE STORAGE OF PETROLEUM PRODUCTS AND OTHER FLUIDS IN A ROCK

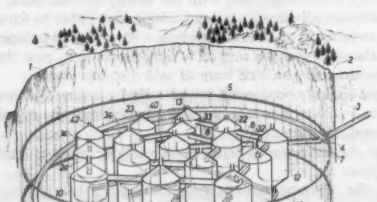
Tore J. Hallenius, Sundsvall, and Karl I. Sagefors, Öregrund, both of Sweden, assignors to WP-System Aktiebolag, Sundsvall, Sweden

Filed Feb. 21, 1979, Ser. No. 13,423

Claims priority, application Sweden, Feb. 21, 1978, 7802027; Feb. 13, 1979, 7901278

Int. Cl.³ B65G *5/00*

U.S. Cl. 405—55 **11 Claims**



1. A system for the underground storage of fluids in rock, said fluids having a specific gravity lower than water comprising a plurality of cavities excavated in the rock, each of said cavities being cylindrical with an axis and a diameter, each cavity forming a storage space, the walls of which are formed by the rock and directly absorb the pressure of the fluid stored in the cavity, the axes of all said cavities being vertical, the vertical height of each cavity being at least equal to its diameter, the distance from each cavity to each adjacent cavity being at least equal to said diameter, and said axes of said cavities as seen in a horizontal cross-section of the system forming a two-dimensional pattern in the form of at least one regular polygon.

4,363,564

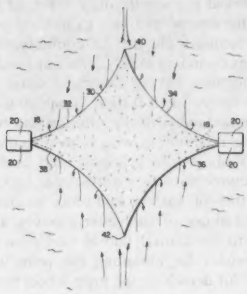
WATER POWER GENERATOR

Peter M. Borgren, Duluth, Minn., assignor to Hydrodynamic Energy Systems Corporation, Superior, Wis.

Filed Sep. 9, 1980, Ser. No. 185,486

Int. Cl.³ E02B *9/08*

U.S. Cl. 405—77 **14 Claims**



1. A water power generator for generating electrical energy from a moving body of water, comprising:

(a) structural means interposed in the path of water flow, said structural means including a first side wall longitudinally curved from a diverting point at the outer end thereof to a gradually flattened curve at the inner end thereof where a vertical plane through the edges of said first side wall is generally more perpendicular to such flow path, with the curvature of said first side wall being continuous from said outer to said inner end thereof, said first side wall also being transversely curved from a generally planar surface at the outer end thereof to a curvature approaching circular at the inner end thereof, and a second side wall the outer end of which merges with the outer end of said first side wall to form an apex, with said second side wall being longitudinally and transversely curved similarly to said first side wall,

(b) cowling means at the inner end each of said first and second side walls, said cowling means being generally conical in shape, tapering from an enlarged end at the juncture thereof with said side wall to a relatively smaller, opposite end, and

(c) turbine generator means at said opposite end of each of said cowling means,

whereby water is diverted by said first and second side walls at said apex, with said water increasing in velocity and thus force as it traverses the longitudinally and transversely curved side walls, with the velocity of the water being further increased during passage through said cowling means prior to reaching said turbine generator means.

4,363,565

TUNNELLING

Colin N. P. MacKenzie, 5 Saltash Close, Loudwater, Buckinghamshire, England

Filed Feb. 19, 1980, Ser. No. 122,788

Claims priority, application United Kingdom, Feb. 21, 1979, 7906046

Int. Cl.³ E21D *9/06, 11/05*

U.S. Cl. 405—146 **8 Claims**

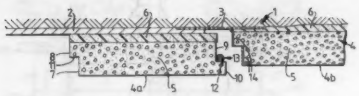
1. A method of constructing a lined tunnel wherein said tunnel is excavated using a tunnelling shield having a tail skin, and the lining is of the expanded type comprising a series of ring sections erected end to end behind the shield as the tunnel

is advanced, each new ring section being formed from a number of arcuate segments which are fitted together circumferentially in front of the previously erected sections and which are expanded radially to provide the new ring section with the required diameter, said method characterised by:

(1) providing said tail skin of said tunnelling shield with a thin rear end portion of greater internal diameter than said tail skin proper; and

(2) erecting each new ring section of said lining by a process comprising the steps of:

(a) assembling the segments of said new ring section to form said ring section in an unexpanded state within said tail skin of said tunnelling shield while said thin rear end portion of said tail skin overlaps the leading end of



the previously erected and fully expanded ring section of said lining;

(b) providing a layer of resilient compressible material around said newly assembled ring section;

(c) pushing said new ring section against said leading end face of said previously erected ring section;

(d) partially expanding said new ring section whereby said layer of resilient compressible material is partially compressed against the inside of said tail skin;

(e) advancing said tunnelling shield until said thin rear end portion of said tail skin overlaps the leading end of said new ring section; and,

(f) further expanding said new ring section until said section reaches the fully expanded condition.

4,363,566

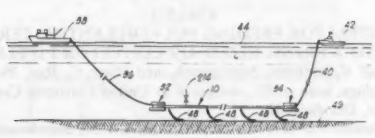
FLOW LINE BUNDLE AND METHOD OF TOWING SAME

Arthur W. Morton, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 14, 1979, Ser. No. 48,316

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **10 Claims**



1. A method of laying a plurality of conduits for conducting fluids between first and second points within a body of water, said method comprising the steps of:

placing said plurality of conduits within a protective tubular covering member to form a flow line bundle;

sealing first and second ends of said flow line bundle to prevent water from entering said conduits and tubular covering, so that said bundle has a positive buoyancy when submerged in said body of water;

connecting weight means to said bundle so that when said bundle is placed in said body of water said bundle has a neutral buoyancy at a position above a floor of said body of water with a portion of said weight means engaging said floor;

pulling said bundle through said body of water to a position adjacent said two points;

connecting ends of each of said conduits to first and second fluid connectors at each of said first and second points respectively; and

flooding a space between said conduits and said tubular covering member with water.

4,363,567

MULTIPLE BORE MARINE RISER WITH FLEXIBLE REINFORCEMENT

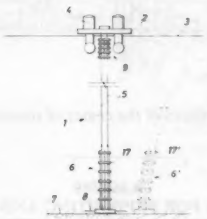
Gerhardus C. Van der Graaf, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 8, 1980, Ser. No. 176,606

Claims priority, application United Kingdom, Sep. 12, 1979, 7931625

Int. Cl.³ E21B *17/01*

U.S. Cl. 405—195 **9 Claims**



1. A multiple bore marine riser including a plurality of parallel flowlines, an assembly of rods extending parallel to the assembly of flowlines over part of the length thereof, wherein cross-sectional diameters of the individual rods vary along the length of the rods, a plurality of rigid horizontal spacer plates arranged between the assemblies of flowlines and rods, said plates being arranged in vertically-spaced relationship to each other over a selected section of the length thereof, and coupling means operatively connecting the individual rods and flowlines to the plates allowing a pivotal movement of the flowlines and the rods with respect to the plates at the coupling means that is about an axis taken normal to the longitudinal axis of the flowlines and rods.

4,363,568

CONDUCTORS FOR A GUYED TOWER AND METHOD FOR INSTALLING SAME

Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 14, 1980, Ser. No. 196,198

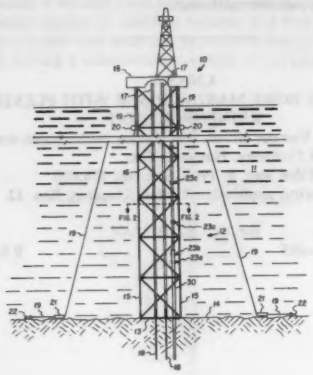
Int. Cl.³ E02B *7/02*

U.S. Cl. 405—227 **8 Claims**

1. A method of installing at least one conductor for conducting drilling and/or production operations from a guyed tower offshore structure of the type having a main truss of substantially uniform cross-section throughout its length which is normally maintained in a vertical position within a body of water by a plurality of guylines, each connected at one end to the upper end of said main truss at points spaced about the periphery thereof and anchored at the other end thereof to the marine bottom, said main truss having at least one set of vertical spaced and aligned conductor guides thereon, said method comprising:

passing a conductor sleeve having a length less than the length of said main truss through at least the lowermost of said conductor guides and penetrating said conductor into the marine bottom on which said guyed tower offshore structure is positioned, said conductor sleeve, when in

position, extending from above said at least lowermost conductor guide to a depth in said marine bottom at least



equal to the depth of the center of rotation of said guyed tower.

4,363,569

APPARATUS FOR SUPPORTING AND ERECTING SUPPORTING MEANS FOR SUPPORTING UNDERSEA PIPELINES AT ALL DEPTHS

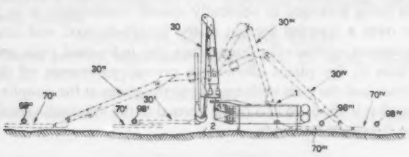
Ambrogio Scodino, San Donato Milanese, and Fernando Po, Milan, both of Italy, assignors to Saipem S.p.A., Milan, Italy

Filed Apr. 17, 1980, Ser. No. 141,188

Claims priority, application Italy, Sep. 17, 1979, 25763 A/79

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—303 **8 Claims**



1. Improved recoverable apparatus for the erecting or forming of liquid cement receiving pipe support means for supporting an undersea pipeline up to a great depth comprising frame means including means for connecting same in a vertically suspended state from a vessel, liquid cement-containing container means mounted on said frame means, hydropneumatic cylinder means mounted on said frame means in operative relationship with said cement-containing container means for actuating discharging the liquid cement therefrom, means mounted on said frame means for actuating said hydropneumatic cylinder means, vertical articulated positioning arm means operatively connected at one end to said frame means, said arm means including three arm elements hingedly connected one after another to each other by horizontally disposed pin means for rotation relative to one another about their respective horizontally disposed pin means, connecting means positioned at the end of the outermost or third arm element for releasably engaging said pipe supporting means, means for actuating each of said arm elements for movement into a plurality of positions, and means operatively associated with said vertical articulated positioning arm means and said cement-containing container means for passage of liquid cement from the cement-containing cement means to the pipe support means releasably connected to the outermost end of the vertical articulated positioning arm means.

4,363,570

UPPER END MOUNTING FOR DEEP WATER THERMAL CONDUIT

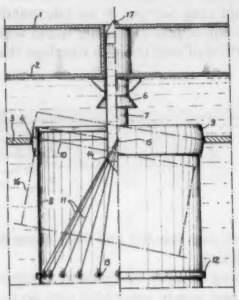
Barend J. G. van der Pot, Delft, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Oct. 3, 1980, Ser. No. 193,691

Claims priority, application Netherlands, Oct. 30, 1979, 7907951

Int. Cl.³ E02D *21/00*; E02B *17/00*

U.S. Cl. 405—303 **4 Claims**



1. A floating device provided with a downwardly running deep sea conduit disposed within a bottom opening at a lower side of said floating device, such as a cold water conduit supplying a floating power station in which the difference in temperature between warm surface water and cold deep sea water may be converted into electrical energy, characterized by: a central core (7) extending upwardly beyond a top of said conduit (8), said core fitting within a generally vertical sleeve (5) extending downwardly through the floating device, said conduit being coupled to said core by a plurality of horizontally disposed flexible centering cables (10) and by a plurality of obliquely oriented flexible weight supporting cables (11), said weight supporting cables running downwardly from said core to an annular portion (12) of said conduit at a lower level, extensions of said weight supporting cables intersecting a point (15) in the center of the core lying in a plane of the centering cables and in a plane of said bottom opening (4), and means (17) securing said core within said sleeve.

4,363,571

SYSTEM FOR FEEDING PULVERULENT MATERIAL INTO A PRESSURIZED AIR CONVEYOR PIPELINE

Carroll V. Jackson, Northbrook, and Blase C. Rau, Western Springs, both of Ill., assignors to United Conveyor Corporation, Deerfield, Ill.

Continuation of Ser. No. 137,482, Apr. 4, 1980, abandoned. This application Jun. 10, 1981, Ser. No. 272,762

Int. Cl.³ B65G *53/48*

U.S. Cl. 406—56 **30 Claims**

1. A system for moving pulverulent material from a receiving hopper into a pressurized air conveyor pipeline comprising, in combination:

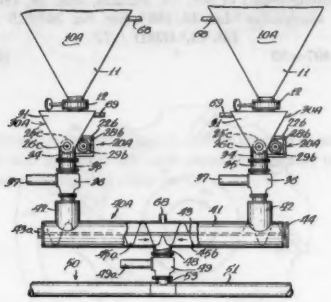
pressure mechanical conveyor means which has an effectively airtight, substantially horizontal casing, a material inlet pipe attached to the top of said casing and communicating with the interior thereof, a material outlet pipe attached to the bottom of the casing remote from said inlet, said outlet pipe communicating with the interior of the casing and with the air conveyor pipeline through the top thereof, and a mechanical conveyor in said casing to move material through said casing from said inlet pipe to said outlet pipe;

transfer conveyor means operatively connected to the bottom of the receiving hopper and to the material inlet pipe

of the pressure mechanical conveyor casing, said transfer conveyor means including a material confining pipe and a mechanical conveyor in said pipe;

primary valve means in said inlet pipe to control movement of material into the casing;

secondary valve means in said outlet pipe to control movement of material from said casing into the air conveyor pipeline;



means for varying the air pressure in said casing between a lower pressure close to atmospheric and higher pipeline pressure;

and control means for filling said casing at said lower pressure and emptying said casing at said higher pressure in a continuous cycle.

4,363,572

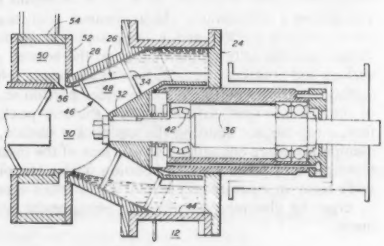
INJECTOR FOR A MATERIAL TRANSPORT SYSTEM

Andrew Harvey, Waltham, Mass., assignor to Foster-Miller Associates, Inc., Waltham, Mass.

Continuation of Ser. No. 46,258, Jun. 7, 1979, abandoned. This application Aug. 14, 1981, Ser. No. 292,808

Int. Cl.³ B65G *53/30, 53/48*

U.S. Cl. 406—58 **10 Claims**



1. A material transport device comprising:

(a) a housing having a frusto-conical nose with an internal chamber, said housing including first and second inlet means and outlet means that communicate with said chamber, said nose tapering inwardly from said outlet means to said second inlet means, said first inlet means configured to direct a liquid external of said housing into said chamber, said second inlet means configured to receive the material to be transported, said material discharged through said outlet means; and

(b) rotor means having a conical shape mounted within said housing for rotation in said chamber at said nose, said rotor means including blade means configured to create a vortex having a central ventilated core from said liquid directed into said chamber through said first inlet means;

(c) said vortex transporting said material at said second inlet means to said outlet means, said material injected into said vortex through said second inlet means, said vortex carrying said material from said second inlet means to said outlet means.

4,363,573

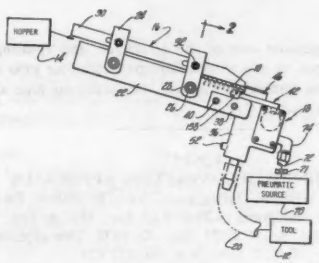
ARTICLE FEEDING APPARATUS

Gary D. Ginther, Grayling, and Murdo A. MacDonald, Bloomfield Hills, both of Mich., assignors to Clyde Corporation, Auburn Heights, Mich.

Filed Oct. 30, 1980, Ser. No. 202,426

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—76 **14 Claims**



1. An apparatus for transferring articles from a source of supply in which a succession of the articles are in side-by-side relation and feeding one article at a time generally longitudinally through a conduit, said apparatus comprising: a housing having a bore therethrough; a separate barrel received in said bore and removably carried by said housing; a pilot passageway extending generally longitudinally through said barrel; an inlet to said passageway through which an article may enter into said passageway with its axis oriented generally parallel to the longitudinal axis of said passageway, an outlet from said passageway longitudinally spaced from said inlet and constructed and arranged for communicating said passageway generally coaxially with the conduit; at least one discharge port in said barrel, communicating with said passageway, and constructed and arranged to discharge a stream of gas at super atmospheric pressure into said passageway and generally toward said outlet for propelling an article through the conduit when connected to said outlet; a metering arm removably carried by said housing, movable to first and second positions, and constructed and arranged to feed one article at a time from the source of supply through said inlet and into said passageway; and a fluid drive motor carried by said housing, operably connected with said metering arm, and constructed and arranged to move said metering arm from at least one to the other of said first and second positions of said metering arm.

4,363,574

METHOD OF EMPTYING A POWDER OR LIKE MATERIAL OUT OF A CONTAINER

Anders Bjurling, Skultuna, Sweden, assignor to Dynatrans AB, Frolunda, Sweden

PCT No. PCT/SE80/00064, § 371 Date Oct. 29, 1980, § 102(e) Date Oct. 29, 1980, PCT Pub. No. WO80/01904, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 5, 1980, Ser. No. 201,398

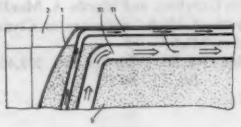
Claims priority, application Sweden, Mar. 5, 1979, 7901936

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—114 **2 Claims**

1. The method of emptying a powder or like material out of a cylindrical, rotatable horizontally disposed container having a longitudinal axis by means of a substantially horizontally disposed carrier-air pipe with perforations along its length, comprising the steps of, locating said carrier-air pipe axially

along the upper free surface of the powder in said container, passing a stream of carrier-air through an air pipe with perforations along its length disposed parallel to the carrier-air pipe to entrain powder into the perforations of the carrier-air pipe and



convey the powder out of the container, and rotating the container about its axis to position the carrier-air pipe along said upper free surface to maintain the carrier-air pipe at said upper free surface.

4,363,575

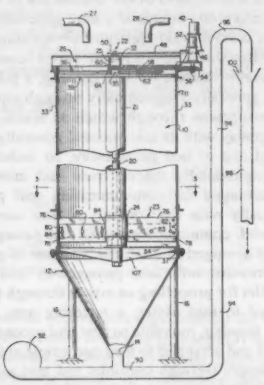
LIQUID-SOLID CONTACTING APPARATUS

Lawrence W. Wisdom, Dallas, and Gordon R. Wilson, De Soto, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Division of Ser. No. 972,404, Dec. 22, 1978. This application Dec. 2, 1980, Ser. No. 212,031

Int. Cl.³ B65G *53/30*; B02B *1/04*

U.S. Cl. 406—122 **11 Claims**



1. Apparatus suitable for providing movement of a bed of solid particles substantially uniformly therethrough in a downwardly direction in contact with liquid comprising:

(a) a generally vertically-disposed vessel for containing a compact bed of solid particles for contact with liquid;

(b) a rotatable, generally horizontally-disposed lower disc means extending substantially throughout the cross-sectional area of a lower portion of said bed for supporting said bed, said lower disc means having at least one opening for passage of solids therethrough from said bed;

(c) means for rotating said lower disc means; and

(d) means for discharging solid particles from the lower portion of said vessel while maintaining liquid in said vessel to a substantial height above said lower disc means, comprising an outlet opening in the lower portion of said vessel and below said lower disc means, flow means communicating with said outlet opening for passing liquid across said outlet opening to receive and carry solid particles away from said outlet opening, and means for substantially equalizing liquid pressure in said flow means with the liquid pressure in said outlet opening to maintain liquid in said vessel during discharge of solid particles therefrom.

4,363,576

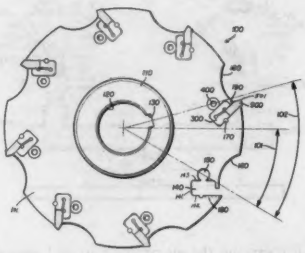
SLOTTING CUTTER

Raymond T. Zweekly, Royal Oak, Mich., assignor to The Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 182,224, Aug. 28, 1980. This application Mar. 30, 1981, Ser. No. 249,025

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—50 **16 Claims**



1. A slotting cutter comprising:

a substantially disc shaped body having first and second lateral surfaces substantially parallel to the plane of rotation and substantially perpendicular to the axis of rotation of the body;

a plurality of pockets spaced about the periphery of the body and extending from one lateral surface to the other, each pocket adapted for receipt of a cutting insert and comprising a substantially rectangular cavity having parallel bottom and top surfaces and a rear surface, at least a portion of the bottom surface shaped for mating receipt of a bottom surface of the cutting insert;

insert retention means including a clamping portion moveable in the plane of body rotation by flexing into clamping engagement with the insert, each retention means further comprising a substantially planar member positioned in a corresponding pocket and having an insert positioning surface substantially perpendicular to the bottom pocket surface and abutting a rear surface of the insert, a bottom surface abutting a bottom pocket surface portion rearward of the insert, a rear surface abutting the rear pocket surface, a top surface abutting the top pocket surface, and a clamping surface engaging a top surface of the insert; and

actuating means positioned for rotation within the plane of body rotation, operative in at least a first rotative position to urge the clamping portion into engagement with the insert.

4,363,577

APPARATUS FOR CONVERTING POWER CHAIN SAW INTO A BORING TOOL

Robert Hartman, Apt. 100, Steven Phillips, Monaca, Pa. 15061

Filed Dec. 29, 1980, Ser. No. 220,368

Int. Cl.³ B23B *43/00*; B27G *17/00*

U.S. Cl. 408—20 **5 Claims**

1. An apparatus for converting a power chain saw into a boring tool, said chain saw including a motor housing, a motor within said housing, a chain guide extending from said housing and a roller nose rotatably mounted in the free end of the chain guide, wherein said apparatus comprises: a sprocket housing; a shaft rotatably mounted in said sprocket housing with one end of said shaft extending beyond said sprocket housing; a sprocket fixidly mounted onto said shaft and within said housing; a boring tool securing means mounted onto said extending end of said shaft; bracket means extending from said sprocket

housing for securing said sprocket housing to the free end of said chain guide so that said shaft is parallel with the rotational axis of said roller nose and said sprocket shares a common

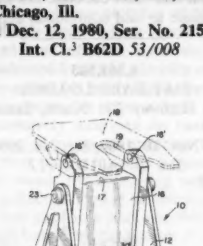
plane with said roller nose; and an endless chain in communication with said sprocket and said chain saw motor, traveling therebetween along said chain guide.

4,363,578

CUSHIONED LOW PROFILE TRAILER

Harold Hesch, St. John, Ind.; Michael DiLuigi, Burnham, Ill., and Thomas Lindauer, Schererville, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 12, 1980, Ser. No. 215,970
Int. Cl.[3] B62D *53/008*
U.S. Cl. 410—56 10 Claims



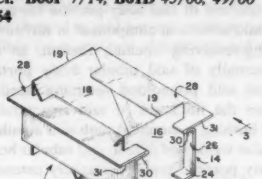
1. In a trailer hitch comprising an upright pedestal,
a platform for supporting said pedestal,
a generally vertical fifth wheel support member,
means pivotally supporting said generally vertical fifth wheel support member on said pedestal for swinging movement about a horizontal axis,
said generally vertical fifth wheel support member including an upper portion disposed above said pivotal means and a lower portion disposed below said pivotal means,
the improvement comprising a cushioning assembly including a generally horizontal plate,
means pivotally connecting said plate to the lower portion of said support member,
first vertical plate means connected to said horizontal plate and depending therefrom,
second vertical plate means supported on said platform and projecting upwardly therefrom, and
shock absorbing means interconnecting said first and second plate means.

4,363,579

DAMAGE PREVENTION VOID FILLER FOR SEPARATING LOADS DURING TRANSIT

Eugene A. Rogers, 302 Ivy La., Arlington Heights, Ill. 60004

Filed Feb. 25, 1980, Ser. No. 124,321
Int. Cl.[3] B60P *7/14*; B61D *45/00, 49/00*
U.S. Cl. 410—154 7 Claims



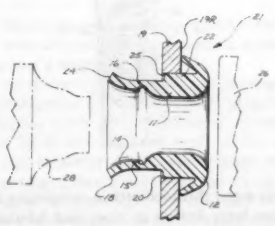
1. A void filler type damage protection device for preventing damage to cargo during transit, the improvement comprising:
a body;
said body having score lines and adapted to be folded from a flat, rectangular shape into an accordion shape with sides adapted to extend vertically when the void filler is in position adjacent cargo;
said body also having diagonal sections extending from the sides and terminating at an apex;
said body having inwardly extending slots;
cap sheet means;
said cap sheet means having top flange means and a downwardly extending web;
said top flange means comprising a first, shortened, layer extending from and connected to the web, and, formed to provide a resilient attachment member for connecting the cap sheet means with the body;
said flange having at least a portion inserted into the associated slots of the body and forming a spring-type connection between the cap sheet means and body to securely join each together; and,
said top flange means having means connecting said diagonal sections and sides to form rigidifying triangle means for strengthening the void filler to resist crushing and twisting.

4,363,580

SELF-RETAINING CLOSE TOLERANCE BUSHING

John H. Bell, Danville, Calif., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 166,597, Jul. 7, 1980, abandoned. This application Jul. 9, 1981, Ser. No. 281,778
Int. Cl.[3] F16B *13/06*
U.S. Cl. 411—15 8 Claims



1. In combination with a structural component having a bushing-receiving opening extending therethrough, a self-retaining molded bushing suitable for use in close tolerance installations wherein the tolerance to be maintained ranges from on the order of +0.002" to on the order of +0.005", said

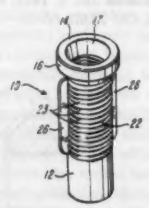
bushing being mounted in said bushing-receiving opening extending through said structural component, said bushing being formed of thermoplastic material and having a circumferentially continuous tubular body portion with an outside diameter D_1, an enlarged premolded first retaining head formed at one end of said body portion for coaction with one surface of said structural component in surrounding relation to said bushing-receiving opening therein, an annular groove formed internally of said tubular body portion and spaced axially from said premolded retaining head by a distance greater than the thickness of said structural component in which said bushing is mounted with said annular groove defining an annular weakened area in said tubular body portion, said tubular body portion having an axially extending area of reduced wall thickness outboard of said annular groove and at the end of said body portion remote from said premolded first enlarged retaining head, said end of said body portion remote from said premolded first enlarged retaining head having an outwardly flared extremity with an outside diameter D_2 where D_2 is greater than D_1, and an external stepped annular shoulder formed on said tubular body portion, said shoulder extending axially from said premolded enlarged retaining head and having an axial length sufficient to provide a good close tolerance bearing surface having a tolerance in the range of $+0.002''$ to $+0.005''$ engagable with said structural component in which said bushing is mounted and having an outside diameter D_3 substantially equal to the diameter of said bushing-receiving opening where D_3 is at least equal to D_2, said axially extending area of reduced wall thickness being expandable outwardly about said annular weakened area by force applied internally thereto until the expanded end of said tubular body portion flips over and backwardly upon said body portion by self-propelled elastic action to form a reversely folded second enlarged retaining head so that said bushing is securely fastened to said structural component with axial movement thereof within said bushing-receiving opening being precluded by coaction between said first and second enlarged retaining heads and the opposite surfaces of said structural component, while radial movement of said bushing within said bushing-receiving opening is precluded by a close tolerance fit with said stepped shoulder.

4,363,581

SHEET METAL THREADED ARTICLE

James F. Pease, 5805 Folkestone Dr., Dayton, Ohio 45459

Filed Aug. 28, 1980, Ser. No. 182,072
Int. Cl.³ F16B *37/12, 37/02*
U.S. Cl. 411—82 **11 Claims**



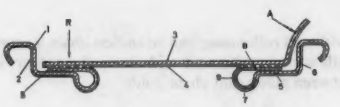
1. A sheet metal threaded article comprising a drawn sheet metal hollow body having an elongated tubular portion projecting from an integrally connected base portion defining an opening, said tubular portion including an inwardly crimped tubular section having a corrugated wall configuration in axial cross-section and forming helical threads, said inwardly crimped tubular section including at least one axially extending folded sheet metal rib of double wall thickness, and said helical threads being adapted to receive a threaded member.

4,363,582

PROCESS FOR THE MANUFACTURE OF RINGS FOR LIDS FOR CANS

Siegfried Bloeck, Singen, Fed. Rep. of Germany, and Rudolf Lüthi, Niederwangen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 40,499, May 21, 1979, Pat. No. 4,253,584.
This application Nov. 6, 1980, Ser. No. 204,469
Claims priority, application Switzerland, Jun. 6, 1978, 6197/78
Int. Cl.³ B21D *51/00*
U.S. Cl. 413—12 **18 Claims**



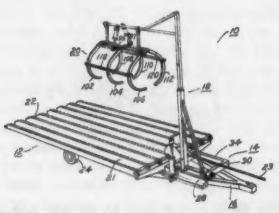
1. A process for forming rings for can lids comprising:
providing a flat blank of metal plate having a first and a second surface;
shaping said flat blank into a first rough shape wherein a substantially continuous depression is formed within the periphery of said blank;
forming an opening within said blank within the area defined by said continuous depression so as to form an inner cut edge defining said opening; and
bending said inner cut edge toward said periphery of said blank such that said inner cut edge lies substantially parallel and proximate to said continuous depression.

4,363,583

HAY BALE LOADER

Jacob Bontrager, Highway 281 North, Jamestown, N. Dak. 58401

Filed Nov. 10, 1980, Ser. No. 205,669
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 **8 Claims**



1. A hay bale loader for use with bale hauling equipment having a rear unloading capability, comprising frame members forming a base for the loader, a boom extending upwardly from said base and having a lower and an upper section telescopically arranged relative to one another, a pivot means positioned longitudinally relative to the hauling equipment for said boom, an arm extending longitudinally outwardly from said boom over the bale hauling equipment and being fully supported by said boom, bale grasping means disposed on said arm and having laterally movable opposed members for grasping a hay bale, a power operated means for moving said upper boom section telescopically relative to said lower boom section, power operated means moving said opposed members toward and away from one another, power operated means for moving said boom on said pivot means to either side of said equipment for bringing said grasping means in proximity to the bale to be loaded, for raising the bale grasped by said grasping

means, and for moving the bale suspended from said grasping means to said bale hauling equipment.

4,363,584

PAPER SHEET ACCUMULATOR ASSEMBLY AND BANK NOTE DISPENSER PROVIDED THEREWITH

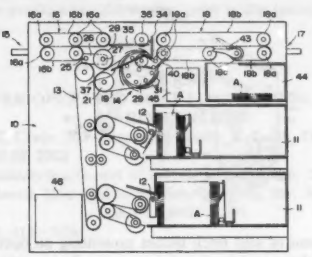
Eiichi Kokubo, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,265

Claims priority, application Japan, Sep. 25, 1979, 54-122910; Sep. 25, 1979, 54-122911

Int. Cl.³ B65H *29/40, 31/08, 31/30*

U.S. Cl. 414—33 **5 Claims**



1. A bank note dispenser having first and second discharge ports provided at the opposed side walls of the frame of the dispenser, which comprises a plurality of bank note stackers each stocking a single kind of bank notes, suction means for sucking a selected kind of bank notes successively from a selected stacker selected from said plurality of bank note stackers, first conveyer means for receiving the bank notes from said suction means to convey the same, a bank note accumulator assembly for successively receiving the bank notes conveyed by said first conveyer means to underlay the same in good order at a collection station to form a bundle of bank notes, second conveyer means for conveying said bundle of bank notes from said collection station selectively along a passage directing to said first discharge port, and third conveyer means for conveying said bundle of bank notes from said collection station selectively along a passage directing to said second discharge port, said bank note accumulator assembly including a paddle wheel disposed downstream of said first conveyer means for delivering bank notes to the accumulator assembly and having a plurality of swirling paddles overlapping with each other, said paddle wheel being carried for rotating to receive bank notes underside of said paddles such that one bank note is inserted under each paddle, an abutting plate disposed adjacently to said paddle wheel for abutting against the leading ends of said bank notes inserted underside of said paddles, and a kick roller for pushing the bank notes and kicking the trailing ends of said bank notes upward to kick out them from the underside of the paddles.

4,363,585

BALE LEVEL CONTROL SYSTEM FOR MECHANICAL HOPPER FEEDER

Alex J. Keller, Clover, S.C.; Erchard A. Fechner, Gastonia, and Joseph R. Williams, Kings Mountain, both of N.C., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.

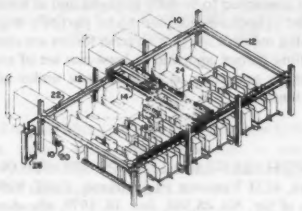
Continuation-in-part of Ser. No. 78,698, Sep. 25, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,217

Int. Cl.³ D01G *13/00*; B66C *17/00*

U.S. Cl. 414—273 **20 Claims**

1. In combination with apparatus for removing fiber portions from a selected plurality of bales of fiber disposed adjacent said apparatus, said apparatus including head means selectively movable from a first position spaced from a bale to a second position in contact with said bale for removing fiber therefrom, and including primary control means for causing said head means to be transported to positions adjacent each of said selected plurality of bales in a predetermined sequence to remove fibers therefrom, the improvement comprising:

(a) means for generating a signal when said head means has traveled a predetermined distance in moving from said first position thereof to said second position thereof while removing fiber from any one of said selected plurality of bales; and



(b) secondary control means for receiving said generated signal and thereafter varying said predetermined sequence of fiber removal by preventing said head means from removing fibers from said one bale until another said signal is received from said signal generating means while said head means is removing fiber from at least one of the others of said selected plurality of bales.

4,363,586

BUNKER-DISCHARGE APPARATUS, ESPECIALLY FOR BULK MATERIAL

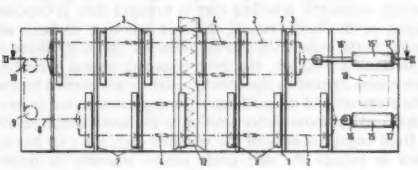
Hans Gessler, Aalen, and Gottfried Marienfeld, Aalen-Wasseralfingen, both of Fed. Rep. of Germany, assignors to Schwäbische Hüttenwerke Gesellschaft mit beschränkter Haftung, Aalen-Wasseralfingen, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,820

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849141

Int. Cl.³ B65G *65/00*

U.S. Cl. 414—311 **14 Claims**



1. A bunker-discharge apparatus, especially for bulk material which moves with difficulty, said apparatus comprising:

a housing having a bottom;

at least one set of conveyor elements, for moving said bulk material, arranged at least in the vicinity of said bottom of said apparatus, each set of conveyor elements being adapted to be driven back and forth in the conveying direction and including side members interconnected by crossbars arranged transverse to the conveying direction, thus providing a ladder shape, said crossbars being generally wedge-shaped in cross section, having a perpendicular pusher surface on that side facing the conveying direction, and a flat-inclined wedge surface on that side facing counter to the conveying direction;

a discharge unit, arranged below the level of said at least one set of conveying elements, including a conveyor member and arranged at right angles to the conveying direction of said at least one set of conveying elements;

at least one pair of hydraulic cylinders respectively operatively connected to said housing and one end of said at least one set of conveying elements;

diverting rollers respectively operatively connected to said housing at the other end of said at least one set of conveying elements for at least indirectly guiding same; and

a timing member operatively connected to said hydraulic cylinders for providing a cycle of operation, said at least one set of conveying elements, said hydraulic cylinders, and said diverting rollers being operatively associated in such a way that at any given time at least one hydraulic cylinder is adapted to be fully engaged and at least another hydraulic cylinder is adapted to be partially engaged by said timing member, so that all push forces are convertible into pulling forces, and said at least one set of conveying elements, in operation, is continuously under adjustable pulling tension.

4,363,587

BENCH WITH SELF-LEVELING PRODUCTION CART

Jack Rooklyn, 4121 Vanowen Pl., Burbank, Calif. 91505

Continuation of Ser. No. 48,346, Jun. 14, 1979, abandoned. This application May 18, 1981, Ser. No. 264,084

Int. Cl.³ B65G *69/24*

U.S. Cl. 414—401 **13 Claims**

1. As an article of manufacture, the combination of elements including a work bench and a self-levelling wheeled cart, the work bench having a configuration shaped to receive the wheeled cart in close juxtaposed position thereto, with the bench and the wheeled cart having flat working surfaces, the work bench and the wheeled cart having inter-engaging means whereby when the wheeled cart is brought into juxtaposed position to the work bench, the said working surfaces are brought to the same level and the wheeled cart is stabilized in its juxtaposed position, the inter-engaging means including guide means carried by the bench, roller means carried by one of the elements and the guide means being constructed to have limited vertical moveability relative to the work bench resulting from engagement with the wheeled cart, the cart having means to engage the said guide means whereby to impart lifting movement to the guide means and to the cart to bring it to the level of the work bench.

4,363,588

REFUSE HANDLING SYSTEM

Arwood D. Stickney, 225 S. Davis St., Missoula, Mont. 59801

Filed Jul. 11, 1980, Ser. No. 167,658

Int. Cl.³ B65F *3/00*

U.S. Cl. 414—408 **8 Claims**

7. A refuse container adapted to rest on a support surface for storage purposes and adapted to be elevated from the support surface for dumping purposes, said container comprising:

a pair of transversely spaced end walls fixed along lower edges to a bottom wall and presenting front and rear upright edges;

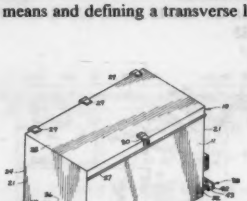
a rear wall fixed across the bottom wall and spanning the rear edges of said end walls;

a front wall spanning the front edges of said end walls and pivoted to them about a transverse hinge axis spaced upwardly from said bottom wall, said front wall being movable between a closed position in engagement with the bottom wall and the front upright edges of the end walls, and an open position projecting outward from said edges;

a latch pin fixed to the movable front wall at one side of the container and at a location below said hinge axis;

rigid latch means mounted outward of the end wall at said one side of the container in a substantially horizontal position and having front and rear ends;

a pivot connection intermediate the front and rear ends of the latch means and defining a transverse latch axis;



the front end of said latch means presenting an open hook pivotal about said latch axis between a first position with the hook overlapping the latch pin when the front wall is in its closed position, and a second position with the hook clear of said location;

the rear end of said latch means having an upwardly protruding projection and a downwardly protruding projection including a bottom surface formed thereon for engagement with the support surface on which the container rests for storage purposes for maintaining the front end of the latch means in said first position until the container is elevated from the support surface.

4,363,589

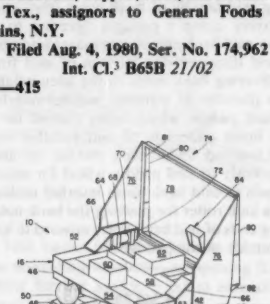
VIBRATING BIN UNLOADER

Boleslaw Rozwadowski, Tappan, N.Y., and Leonard E. Bucklew, Houston, Tex., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,962

Int. Cl.³ B65B *21/02*

U.S. Cl. 414—415 **7 Claims**



1. An arrangement facilitating the unloading of a product bin through tilting thereof and inducing vibrations in the bin while in a tilted position, comprising:

(a) a stationary base frame of essentially cuboidal dimensions;

(b) an intermediate frame pivotally journaled on opposed members of said base frame for tilting movement relative to said intermediate frame during unloading of product bin supported on the arrangement;

(c) means for tilting said intermediate frame relative to said base frame to assist in unloading a product bin supported by the arrangement;

(d) a vibratory frame on said intermediate frame, mounting means extending intermediate said vibratory and intermediate frames, said vibratory frame having its upper surface contoured to support a product bin placed thereon, said mounting means comprising hydraulic isolation means for isolating said intermediate frame from vibrations induced in a product bin supported on the vibratory frame; and

(e) means for inducing vibrations to said vibratory frame and the product bin thereon to assist in the unloading of said bin.

4,363,590

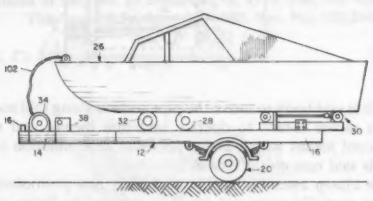
POWER OPERATED BOAT LOADING/UNLOADING MARINE TRAILER

Barry T. Crate, 253 Queensway South, Keswick, Ontario, Canada (L4P 2B2)

Continuation-in-part of Ser. No. 78,776, Sep. 25, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 190,997

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—518 **13 Claims**



1. A marine trailer, comprising a frame having a front end portion, an intermediate portion and a rear end portion, idler rollers carried by said frame on the intermediate portion thereof, powered roller means carried by the frame on the rear end portion thereof, means for driving said powered roller means to load a boat on the trailer, said powered roller means including two laterally spaced roller assemblies pivotally mounted on the frame, each of said roller assemblies including an elongated support having opposite ends, a pair of rollers rotatably mounted on the support adjacent each of said opposite ends, means pivotally mounting each of the supports on the frame intermediate said opposite ends, said driving means including a drive motor associated with each of said roller assemblies, gear means drivingly connecting each of the said drive motors to the pairs of rollers of each of the roller assemblies, a battery mounted on the frame, and power circuit means operatively connecting the battery to said drive motors for controlling energization thereof to load or unload the boat, said power circuit means including a hand held control unit.

4,363,591

TOWING ATTACHMENT FOR VEHICLES

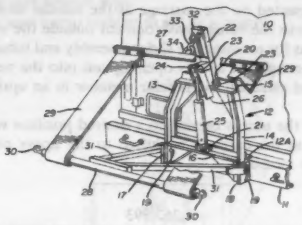
Kenneth Mackall, Jr., 7438 Depot St., Rogers, Ohio 44455, and Richard Noling, 45635 Crestview Dr., New Waterford, Ohio 44445

Filed Dec. 22, 1980, Ser. No. 219,317

Int. Cl.³ B60P *3/12*

U.S. Cl. 414—563 **5 Claims**

1. A vehicle towing and lifting attachment for use on trucks comprises a vehicle support frame having horizontally spaced vertically extending side members, upper and lower horizontally positioned frame members, a mounting member secured to said truck and means for detachably mounting said frame to said mounting member, a pivoted lifting arm extending from said upper horizontally positioned frame member and means for moving and locking said lifting arm in a desired position, a pair of horizontally disposed spaced parallel bars, one of which



is secured to said lifting arm, flexible members interconnecting said bars, spacer arms movably secured to said means for detachably mounting said frame to said mounting member and to the other of said parallel bars.

4,363,592

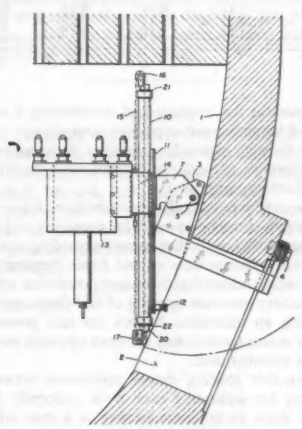
TOOL FOR REMOTELY INSTALLING EQUIPMENT THROUGH AN ACCESS OPENING

Joseph A. Tedder, East Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 19, 1981, Ser. No. 225,871

Int. Cl.³ B25J *3/00*

U.S. Cl. 414—590 **6 Claims**



1. An apparatus with which to transport a unit from a first environment to a second environment, including,

a vessel having a wall as a boundary between a hostile environment within the vessel and a benign environment outside the vessel,

an access opening through the wall of the vessel,

a support framework mounted on the wall from the benign environment outside the vessel and extensible through the access opening and into the vessel interior,

a pivot structure mounted on that portion of the framework extended into the hostile environment within the vessel,

a slider assembly supported at the pivot structure so that it may be pivoted from outside the vessel to within the vessel through the access opening,

an elongated tubular structure mounted on the slider assembly in the arrangement which will permit the tubular structure to longitudinally shift relative to the slider assembly toward and away from the vessel interior,

a carriage structure mounted in sliding engagement with the tubular structure,

means for shifting the carriage to the upper end of the tubular member,

a unit mounted on the carriage as the tubular structure extends into the benign environment outside the vessel,

and means for pivoting the slider assembly and tubular structure through the access opening and into the vessel interior and establish the tubular member in an upright position,

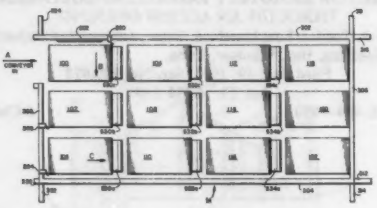
whereby the unit is carried to a desired position within the vessel as the carriage is shifted to the upper end of the tubular member.

4,363,593

APPARATUS FOR POSITIONING BATTERIES AND HOISTING BATTERIES INTO A BATTERY FORMATION TUB

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Aug. 15, 1979, Ser. No. 66,798
Int. Cl.³ B66F *11/00*
U.S. Cl. 414—592 **14 Claims**



1. An apparatus for creating and transferring a matrix arrangement of batteries, said apparatus comprising:

(a) matrix-forming means for receiving, locating and retaining a plurality of batteries therein, said matrix-forming means further comprising:

(i) a generally rectangular open bottom frame member having an entrance opening for receiving said batteries;

(ii) a powered base roller means extending transversely between opposite sides of said frame member; and

(iii) an independent shuttle means positioned adjacent to the battery entrance opening of said frame member, for moving an individual battery on said powered base roller means transversely between opposite sides of said frame member; and

(iv) pivotable spacing means positioned between each battery for separating each by a uniformly fixed distance from an adjacent battery in a row within said matrix;

(b) transfer means fittable within said matrix-forming means for fitting around and holding tightly at least two sides of said batteries in said matrix-forming means, said transfer means being adapted to be lifted, whereby lifting said transfer means lifts said batteries from said matrix-forming means in the matrix formation.

4,363,594

PIPE SECTION POSITIONING APPARATUS

Andre Morin, Clovis, Calif., assignor to Perini Corporation, Mendota, Calif.

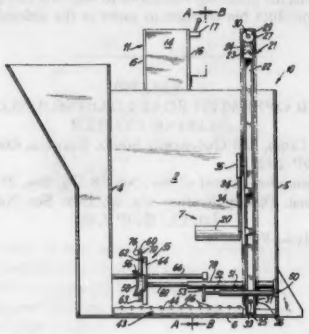
Filed Jun. 24, 1980, Ser. No. 162,632
Int. Cl.³ B66F *11/00*
U.S. Cl. 414—747 **8 Claims**

1. An apparatus for positioning pipe sections to be joined with a previously positioned pipe section, said apparatus comprising:

a body adapted to be positioned partially below ground level and having opposed side walls, end walls and a bottom wall;

an elevator connected within said body, a pipe cradle moved by said elevator and adapted to removably hold a pipe section, pipe cradle control means which under operator determination controls the pipe cradle to hold and release a pipe section, elevator motor means to operate said elevator and thereby raise and lower said pipe cradle, and elevator control means which under operator determination controls said elevator motor means;

a horizontally aligned track within said body and partly positioned beneath said elevator to receive and support a pipe section deposited from said pipe cradle, ram means



within said body to move the pipe section along said track, ram motor means to operate said ram means, and ram control means which under operator determination controls said ram motor means;

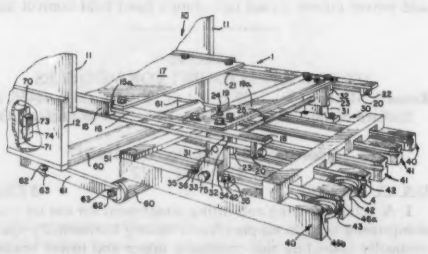
a pipe clamp assembly within said body and positioned at least partially over said track to removably fasten on a pipe section, said pipe clamp assembly comprising clamp means to close and hold the pipe section and to open and release the pipe section, pipe clamp motor means to open and close said clamp means, pipe clamp control means which under operator determination controls the pipe clamp motor means, and pipe clamp assembly motion means which under operator control moves the pipe clamp assembly to position the clamped pipe section.

4,363,595

APPARATUS FOR UNLOADING MOLDED ARTICLES

Jerry D. Reichenbach, Carpentersville, and Keith W. Christiansen, Fox River Grove, both of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed May 12, 1980, Ser. No. 148,916
Int. Cl.³ B29C *3/04*
U.S. Cl. 414—749 **7 Claims**



1. An apparatus for unloading molded articles from a molding press, said molding apparatus comprising, in combination,

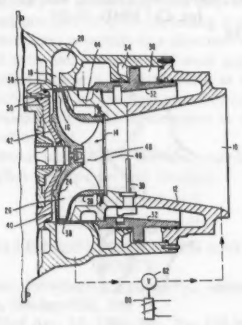
an unloading apparatus support plate adapted to be operatively positioned relative to a molding press so as to lie generally parallel to the plane of the plate on which the molded products in said press are positioned for unloading, a reciprocable unloader carrier unit mounted for sliding movement relative to said support plate along an axis parallel to the extent of said plate, an unloading assembly carried and positioned by said carrier unit, said unloading assembly comprising a multiple track unloader which includes a plurality of spaced apart unloader bars, each bar having a slot therein and disposed in facing relation to an associated slot in an adjacent bar, whereby associated pairs of slots comprise individual tracks for receiving said molded articles, means for extending and withdrawing said unloader carrier and said unloading assembly for collecting molded articles from said tracks, said apparatus further including means for pivotally mounting said multiple track unloader relative to said unloader received when said unloader lies in one plane and carrier for swinging movement, whereby said articles may be discharged when said unloader is pivoted so as to lie in another plane.

4,363,596

METHOD AND APPARATUS FOR SURGE DETECTION AND CONTROL IN CENTRIFUGAL GAS COMPRESSORS

Thomas E. Watson, Staunton, and Paul R. Smallwood, Jr., Grottoes, both of Va., assignors to McQuay-Perfex, Inc., Minneapolis, Minn.

Division of Ser. No. 49,686, Jun. 18, 1979, Pat. No. 4,265,589.
This application May 19, 1980, Ser. No. 150,844
Int. Cl.³ F01D *2/12*
U.S. Cl. 415—1 **2 Claims**



1. In a centrifugal gas compressor having an impeller with a back plate mounted in an impeller chamber having a back wall, the method of detecting a surge condition comprising sensing a temperature rise beyond a predetermined value in a space in the impeller chamber of the compressor, exterior of the flow path of gas through the impeller and at a location between the impeller back plate and the back wall of the impeller chamber.

4,363,597

METHOD FOR OPERATING PUMPS

Sachio Tsunoda, and Katsunori Shirasu, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 5, 1980, Ser. No. 213,231
Claims priority, application Japan, Dec. 28, 1979, 54-173292
Int. Cl.³ F03B *3/10*
U.S. Cl. 415—1 **4 Claims**

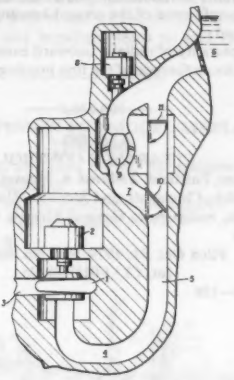
1. A method for operating pumps in a pumping-up power plant having a single speed reversible pump turbine and a booster pump, said booster pump being provided in a branch pipe which is in parallel with a portion of a draft tunnel between said pump turbine and a lower reservoir; comprising the steps of:

closing an inlet valve at the discharge side of said pump turbine;

closing said portion of said draft tunnel which runs parallel with said branch pipe;

opening said branch pipe;

starting said pump turbine in air as a pump;



starting exhaustion of the air remaining inside said pump turbine after the rotation speed thereof reaches a predetermined value;

starting said booster pump after starting said exhaustion; and

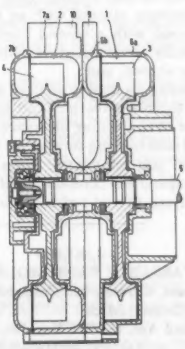
opening said inlet valve at the discharge side of said pump turbine after the rotation speed of said booster pump reaches a predetermined value.

4,363,598

MULTISTAGE SIDE-CHANNEL COMPRESSOR

Siegfried Schönwald, Bad Neustadt, and Gert Hecht, Bremen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 896,232, Apr. 13, 1978, abandoned.
This application Jun. 9, 1980, Ser. No. 157,891
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 7715000[U]
Int. Cl.³ F04D *5/00*
U.S. Cl. 415—53 T **1 Claim**



1. A multistage side channel compressor comprising:

an input stage having an input and an output, and

an output stage axially coupled to the input stage, the output stage having an input which is coupled to the output of input stage and an output, in which:

each stage comprises a first housing half and a second housing half, each housing half having a circumference, and

the first housing half of the input stage and the second housing half of the output stage comprise a compact housing for a single stage compressor and are without cooling fins on their circumferences,

and further comprising:

a first plurality of radially outward extending cooling fins on the circumference of the second housing half of the input stage; and

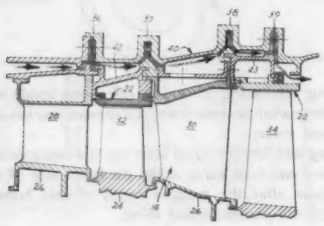
a second plurality of radially outward extending cooling fins on the circumference of the first housing half of the output stage.

4,363,599

CLEARANCE CONTROL

Larry D. Cline, Fairfield; Ambrose A. Hauser, Wyoming; James E. Sidenstick, Cincinnati, and Mark S. Zlatic, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 31, 1979, Ser. No. 89,790
Int. Cl.³ F01D 25/26
U.S. Cl. 415—136 9 Claims



1. An improved turbomachine having a compressor section and a turbine section with turbine parts rotating in close clearance relationship within a circumferential turbine shroud structure for operation over a range of temperatures and speeds, wherein the improvement comprises:

at least one pair of clearance control rings structurally integrated into a turbine case surrounding the turbine section, wherein said rings comprise radially extending structures that are provided with internal passages for directing a fluid through said pair of rings to control thermal growth thereof, said pair of rings being generally radially aligned with a turbine shroud, a first control ring of said pair being generally radially aligned with an upstream end of said turbine shroud with a second control ring of said pair being generally radially aligned with a downstream end of said turbine shroud; and

means for causing thermal growth of said turbine shroud to respond to thermal growth of said pair of control rings for the purpose of controlling clearance between said turbine shroud and said rotating turbine parts wherein said generally aligned pair of control rings causes said turbine shroud to expand and contract radially and remain parallel to a central axis of said turbomachine.

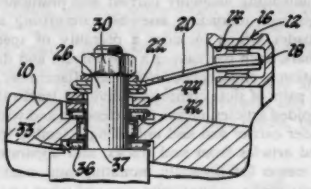
4,363,600

VARIABLE VANE MOUNTING

Glenn W. Thebert, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 6, 1981, Ser. No. 251,070
Int. Cl.³ F01D 9/02
U.S. Cl. 415—156 4 Claims

1. In a turbomachine of the type having an outer casing and an adjustable stator vane assembly including a vane with a shaft portion rotatably supported on said outer casing, a bearing surface on said vane, a thrust bearing between said bearing surface and said outer casing for permitting rotation of said vane while resisting thrust loading in the direction of said shaft portion induced by fluid flow through said turbomachine, said thrust loading being offset relative to said shaft portion and producing offset loading on said thrust bearing, and actuator arm means connected to said shaft portion outboard of said



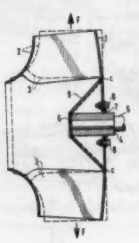
outer casing for rotating said vane, the improvement comprising, spring means disposed outboard of said casing engageable on said shaft portion to effect application of spring force on said shaft portion in offset fashion thereby to develop on said shaft portion offset loading counter to said thrust force induced offset loading on said stator vane.

4,363,601

IMPELLER IN A CENTRIFUGAL BLOWER

Seppo J. Leskinen, Västerskog, Finland, assignor to OY Nokia AB, Helsinki, Finland

Filed Jan. 28, 1980, Ser. No. 115,622
Claims priority, application Finland, Jan. 19, 1979, 790284
Int. Cl.³ F04D 29/28
U.S. Cl. 416—188 12 Claims



1. A centrifugal-blower impeller assembly comprising:

a front plate,

a back plate spaced from said front plate,

a plurality of blades extending between and attached to said front and back plates,

a hub attached to said back plate, and

means for prestressing said back plate in a direction generally opposite to the stresses produced by centrifugal force when said impeller assembly rotates, whereby said back plate is in an initially prestressed condition prior to impeller operation.

4,363,602

COMPOSITE AIR FOIL AND DISC ASSEMBLY

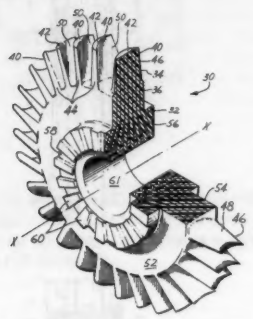
Jack R. Martin, Bedford, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Feb. 27, 1980, Ser. No. 125,063
Int. Cl.³ F01D 5/34
U.S. Cl. 416—230 6 Claims

1. For use in a turbomachine, an integral composite airfoil and disc assembly adapted for rotation about an axis said assembly including a radially outer airfoil portion having a plurality of generally radially and axially extending circumferen-

tially spaced-apart airfoils and a bore portion disposed radially inward of said airfoil portion, the invention comprising:

a first plurality of filamented plies comprising said airfoil portion and said bore portion, said plies including a plurality of first filaments comprising one of said airfoils and disposed generally parallel to a radial line emanating perpendicularly from said axis, said plies disposed axially adjacent each other in said airfoil portion, at least two adjacent plies splaying in said bore portion axially away from each other providing in said bore portion an axial gap between said splayed apart adjacent plies;



a second plurality of filamented plies disposed in said gap, said second plurality of plies including a second filament oriented to extend generally in a direction circumferential about said axis, and wherein said axial gap between said adjacent plies increases in axial width in the radially inward direction and said second plurality of plies has axial cross-sectional width which increases in the radially inward direction; and

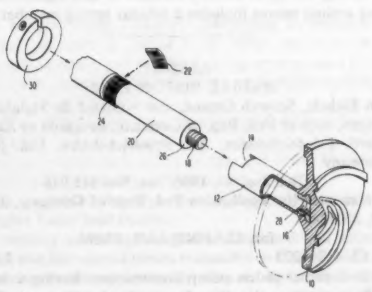
a matrix material interspersed between said first plurality of filament plies and said second filament.

4,363,603

PUMP IMPELLER ASSEMBLY WITH ANTI-ROTATION DEVICE

Ray R. Petersen, Huntingdon Valley, Pa., assignor to Met-Pro Corporation, Harleysville, Pa.

Filed Apr. 14, 1980, Ser. No. 139,891
Int. Cl.³ F04D *29/04;* F16D *1/08*
U.S. Cl. 416—244 R **8 Claims**



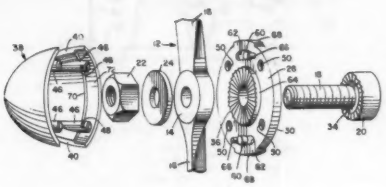
1. In a pump construction of the type in which a rotatable impeller means is threaded onto a driving shaft means, the improvement which comprises providing said impeller means with integral tubular means for mating with said driving shaft, said tubular means having a portion of predetermined shape removed therefrom, providing said driving shaft with radially symmetric locking means and providing means interacting with said removed portion and said radially symmetric locking means whereby said impeller means is fixed with respect to said shaft, said means interacting with said portion comprising a portion of a cylinder of the same radius as said tubular portion of said impeller and having means on the internal surface thereof interacting with means on the surface of said driving shaft for locking said impeller means to said driving shaft means.

4,363,604

PROPELLER SPINNER FOR MODEL AIRPLANES OR THE LIKE

Dewey O. Broberg, Jr., Long Grove, Ill., assignor to Du-Bro Products, Wauconda, Ill.

Filed Jan. 8, 1981, Ser. No. 223,265
Int. Cl.³ B64C *11/14*
U.S. Cl. 416—245 R **26 Claims**



1. A spinner for use with a model airplane, or the like, which has a propeller on a propeller shaft, the propeller having propeller blades with shanks, and the propeller being disposed between a thrust plate fixed to the propeller shaft and retaining means such as a propeller nut threaded onto the propeller shaft, comprising:

a base plate having a passage for receiving the propeller shaft axially therethrough, said base plate being positionable between the thrust plate and the propeller and held in such assembly for conjoint rotation by said propeller nut;

an air piercing nose cone located forwardly of the propeller and having a base portion engageable with said base plate, said nose cone having radial openings for receiving the shanks of the propeller blades;

locking means mounted on said base plate for movement relative thereto between a locking position and a release position; and

engaging means on said nose cone complementarily engageable by said locking means when in said locking position to hold the nose cone on said base plate for conjoint rotation therewith, said engaging means being disengaged by said locking means when in said release position to permit the nose cone to be readily removed for access to said retaining means.

4,363,605

APPARATUS FOR GENERATING AN ELECTRICAL SIGNAL WHICH IS PROPORTIONAL TO THE TENSION IN A BRIDLE

Manuel D. Mills, 2808 Delano, Midland, Tex. 79701

Filed Nov. 3, 1980, Ser. No. 203,529
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—44 **8 Claims**

5. In a pump jack unit having a bridle which reciprocates a rod string, a motor for said pump jack unit, circuit means including a switch means for controlling the flow of current to

the motor of the pump jack unit; the combination with said pump jack unit of an apparatus for generating an electrical signal which is proportional to the tension in the bridle which supports the string of sucker rods;

said apparatus comprising a frame, cable engaging means connecting said frame to one cable of the bridle; a load cell, means mounting said load cell to said frame; another cable engaging means connected between said load cell and another cable of the bridle such that the load cell is placed in compression when the rod string is placed in

tension; and, means by which said cable engaging means can be moved respective to one another to thereby resistingly move the bridle cables laterally respective to one another while increasing the compression placed on the load cell;

means responsive to said signal for actuating said switch means when said signal is of a predetermined configuration, so that said circuit means can be used to de-energize the motor of a pump jack unit whenever a pump-off condition is encountered.

4,363,606

FREE PISTON PUMP FOR PUMPING LIQUIDS FROM A WELL

Raymond L. Kilgore, P.O. Box 1715, Corpus Christi, Tex. 78403

Filed Jun. 30, 1980, Ser. No. 164,635

Int. Cl.³ F04B *47/12*

U.S. Cl. 417—59 **8 Claims**

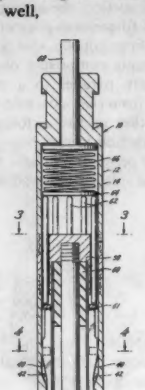
1. A free piston pump for pumping liquids from a conduit in a liquid-gas well comprising,

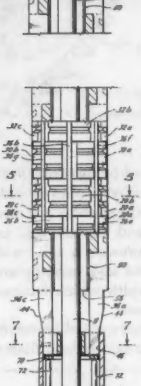
a body,

a plurality of vertically and horizontally spaced piston segments supported from the body and radially movable inwardly and outwardly, said vertically spaced piston segments being sealingly interengaged, said segments having an outer arcuate surface for sealing with the interior of a well conduit,

means for retracting said segments when the body reaches the top of the well,

means for expanding said segments when the body reaches the bottom of the well,





said segments include an inner arcuate surface and means sealing the inner arcuate surfaces of said segments, and said sealing means includes a tubular spring member.

4,363,607

RADIAL PISTON PUMP

Erich Eichele, Schwab Gmund, and Winfried de Maight, Mutlangen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,916

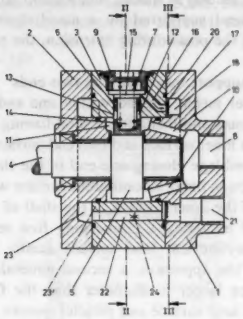
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901240

Int. Cl.³ F04B *1/18, 27/04*

U.S. Cl. 417—273 **2 Claims**

1. In a radial piston pump construction having a housing (1-2-3) mounting a plurality of spring-loaded plungers (6) operated by an eccentric (5) to effect unidirectional flow of fluid from chambers (14) internally of the plungers to a surge chamber (18) connected to an outlet (21), the improvement residing in a second surge chamber (23) enclosed in the housing, and conduit means (22) interconnecting said surge chambers, said

conduit means comprising a plurality of connecting passages formed in said housing, said housing including a body (3) within which the plungers are mounted and a pair of end covers (1 and 2) secured to the body in a axially spaced relation



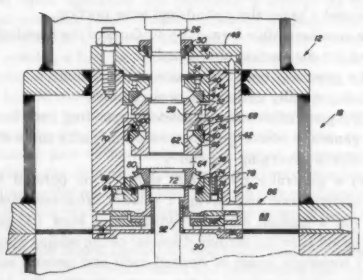
to each other, said first mentioned surge chamber (18) being formed by an annular cavity in one of the end covers (1), the second surge chamber (23) being formed by an annular cavity in the other of the end covers (2).

4,363,608

THRUST BEARING ARRANGEMENT

Jan A. Mulders, Etten-Leur, Netherlands, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 20, 1981, Ser. No. 255,946
Int. Cl.³ F04B *21/00*; F16C *19/30*
U.S. Cl. 417—424 **5 Claims**



4. A vertical pump assembly comprising an impeller for pumping fluid from an intake to an outlet and a motor for driving said impeller, and a thrust bearing arrangement located between said impeller and said motor, said thrust bearing arrangement comprising

an upper, middle and lower bearing, each spaced from the others;

means to preload each of the middle and lower bearings to apply a first-value load thereto; and

means to preload the upper bearing to apply a second and higher value load thereto;

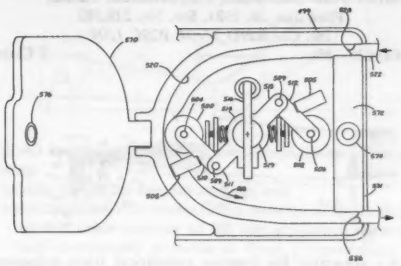
said bearing assembly being so constructed and arranged that said last-named means transmitts its load to said lower bearing under no upwardly directed thrust load conditions such that said lower bearing shares the load of said upper bearing while said middle bearing continues to carry its preload, and said middle and upper bearings carry the load under the upwardly directed load conditions while at the maximum upwardly load conditions the lower bearing carries only its preload.

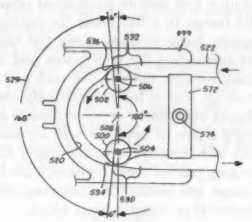
4,363,609

BLOOD PUMP SYSTEM

Louis C. Cosentino, Wayzata; Bill H. Niemi, Brooklyn Park; John P. Silbernagel, Spring Lake Park, and Jamshed R. Cooper, Golden Valley, all of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Division of Ser. No. 849,338, Nov. 7, 1977, Pat. No. 4,221,543. This application Jan. 23, 1980, Ser. No. 114,717
Int. Cl.³ F04B *43/12*
U.S. Cl. 417—477 **6 Claims**





1. In a pump comprising an arcuate bearing surface adapted to carry a flexible tube through which fluid may pass, a pair of 180° spaced-apart, pivotally-mounted rollers whose axes travel along a circular path concentric with said bearing surface whereby said rollers occlude the tube so as to pump the fluid therethrough, means for rotating said rollers around said circular path, and lead ramps extending from each end of said bearing surface, the improvement wherein:

said bearing surface defines an arc of approximately 168° and each of said lead ramps is substantially tangent to the end of the bearing surface from which said respective lead ramp extends so as to provide the optimal torque peak reduction for driving said pump, and the optimal graduated change in cross-section of the bore of the tube as each of said rollers approach and recede from the points of occlusion of the tube;

and further comprising means located radially with respect to the axis of rotation of said rotating means independently operable with respect to each of said rollers for independently and precisely varying the extent to which each of said rollers occludes the tube, including means for continuously adjusting the radial deflection of each roller as it occludes the tube so as to provide proper occlusion despite tube irregularities while allowing for varying the rate of change of radial force applied to each of said rollers, said means for varying the extent to which each of said rollers occludes the tube comprising two separate arms, each of said arms carrying one of said rollers, said continuously adjusting means comprising a separate thumb wheel threadedly connected to each of said arms, each of said thumb wheels having a neck portion, and compression spring and an elastic sleeve concentrically located around said neck portion, said spring being spaced from said

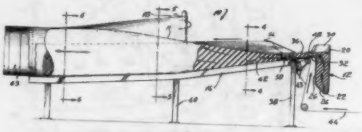
sleeve and said sleeve being located within said spring and supported by said neck portion.

4,363,610

APPARATUS FOR CONTINUOUSLY MOLDING CYLINDRICAL BLOCKS OF FOAMED POLYMERIC MATERIAL

Bruce A. Murray, Dollard des Ormeaux; Peter H. Hasler, and Augustin Roth, both of St. Leonard, all of Canada, assignors to Miller Foam Enterprises, Inc., Montreal, Canada

Filed Jan. 26, 1981, Ser. No. 228,582
Int. Cl.³ B29D *27/04*; B29C *1/04*
U.S. Cl. 425—89 **6 Claims**



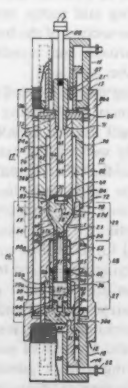
1. An apparatus for forming cylindrical foam polymeric blocks, comprising an upright prefoaming trough, a weir including a flange extending from an upper edge of the trough, means for feeding a first web in a flattened condition immediately below the flange in a flat plane for receiving freely expanding polymeric foam exuding from the trough over the weir, means for supporting the web below and downstream of the flange, means for first shaping the web to have a channel shape in a first stage, means for succeedingly shaping the web to have a U-shaped curvilinear cross-section in a second stage, means for feeding a pair of opposite wall forming webs merging with the first web, means for succeedingly shaping the first web in the merging pair of webs to have a circular cross-section in a third stage, and means for advancing the webs and the so-formed cylindrical polymeric foam block.

4,363,611

APPARATUS FOR HYDROSTATIC EXTRUSION OF THERMOPLASTIC POLYMERS

Alfred R. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 72,807, Sep. 5, 1979, Pat. No. 4,282,277, which is a continuation-in-part of Ser. No. 941,116, Sep. 8, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,282
Int. Cl.³ B30B *11/30*
U.S. Cl. 425—97 **3 Claims**



1. A hydrostatic extrusion press provided with means for applying extrusion pressure to extrude a generally cylindrical semi-crystalline thermoplastic polymer preform having an outer surface and a bore surface whereby the preform is forced to pass in a solid state through an annular orifice defined by the surface of a die section in spaced relationship with the surface of a mandrel-head supported by a mandrel and means for rigidly aligning the press during extrusion, the press comprising:

(a) an outer support means having two ends

(b) a container means aligned within one end of the outer support means and including a shell having an outer surface and an inner surface and two end surfaces, a plug and piston assemblage closing one end of the shell,

(c) the die section being a continuous surface with respect to one end of the inner surface of the shell of the container means and including a converging first section, a first generally cylindrical land surface axially aligned with respect to the apparatus, a second generally cylindrical land surface larger in diameter than the first generally cylindrical land surface and parallel thereto and a diverging conical surface connecting the first and second generally cylindrical parallel land surfaces and forming an angle α of between 15° and 45° with the axis of the apparatus,

(d) an extrudate receiving means aligned within the other end of the outer support means and including a shell having an outer surface and an inner surface and two end surfaces, a mandrel having two ends coaxially aligned within the outer shell and generally in spaced relationship to the inner surface thereof,

(e) a generally conical mandrel-head supported on the other end of the mandrel and in spaced relation with the surfaces of the die section, having a recessed base surface, a generally cylindrical tapering upper portion which forms an angle β of between 20° and 50° with the axis of the apparatus and a generally cylindrical nose portion,

(f) an annular orifice formed by surfaces of the mandrel-head and the die section comprised of:

(i) a generally converging conical entrance,

(ii) a generally cylindrical sealing zone,

(iii) a generally conically shaped expanding zone having a generally converging cross-sectional area and a diametrically diverging geometry,

(iv) a generally cylindrical sizing zone parallel to the sealing zone and having a smaller cross-sectional area and a median diameter which is at least 100 percent larger than the median diameter of the sealing zone, and

(v) transition zones of desired radii and smooth surfaces between any two of the zones whereby the billet is substantially simultaneously expanded circumferentially at least 100 percent and axially elongated at least 50 percent, and

(g) sealing means formed by the surfaces of the mandrel-head in contact with the inner surface of the billet and the die surfaces in contact with the outer surface of the billet in the container assembly whereby leakage of fluid is prevented during loading and prior to extrusion and a film of the hydrostatic fluid is formed on the surfaces of the billet during extrusion

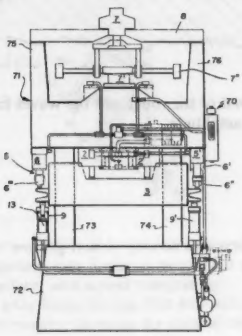
(h) a first pressurizing means disposed adjacent ones of the two ends of the outer support means and contiguous with the plug and piston assembly and one end surface of the container assembly of (d) whereby pressure for extrusion is applied to the preform, and

(i) a second pressurizing means disposed adjacent the opposite end of the outer support means and contiguous with one end of the extrudate receiving means and coacting with the first pressurizing means to rigidly align the extrusion press.

4,363,612
FLYWHEEL AND SCREW PRESS FOR PRODUCING CERAMIC ARTICLES

Ulrich Walchhutter, Rua Corrego Tiburcino No. 74, Sao Paulo, Brazil

Continuation-in-part of Ser. No. 25,085, Mar. 29, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,508
Int. Cl.³ B29C *3/00*
U.S. Cl. 425—167 4 Claims

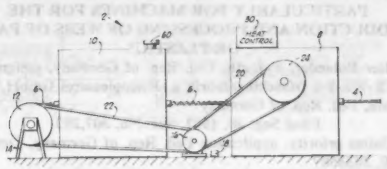


1. A flywheel and screw press for producing ceramic articles comprising, in combination, a base having an upper surface; a fixed head; support means supporting said fixed head in fixed position upwardly spaced from said upper surface of said base; a movable beam located in the space between said upper surface and said fixed head and being guided on said support means for movement toward and away from said upper surface; mould means carried by said base and provided with cavities open upwardly for receiving a charge of ceramic powder material, punch means carried by said movable beam and designed to cooperate with said cavities for forming ceramic articles, a first pair of hydraulic piston means carried by said base and provided for imparting an upwardly directed thrust to said movable beam; a second pair of hydraulic piston means carried by said fixed head and provided for imparting a downwardly directed thrust to said movable beam, said first and second pair of hydraulic piston means cooperating for controlling the downward stroke of said movable beam for imparting to the powder in the cavities a soft pre-compression causing a first thickness reduction of the powder mass and an appreciable expulsion of the air enclosed; a third pair of hydraulic piston means carried by said fixed head and controlled for acting on the movable beam and performing the first compacting step after the soft pre-compression; a fourth pair of elastically compressible hydraulic piston means carried by said base and provided with adjustable rod ends and able to interfere with said movable beam when the latter is further lowered during said first compacting step for impressing to said movable beam an upwardly directed thrust helping the elastic return of the compacted powder mass to raise said movable beam immediately after said first compacting step, allowing the expulsion of the remaining air; a flywheel disposed above said fixed head, a screw threadedly engaged to said flywheel and carried by said fixed head; motor means provided for alternatively imparting to said flywheel and screw rotation in one and in the other direction for lowering and raising said flywheel and screw, and control means for controlling said motor means to operate said flywheel and screw in the lowering direction in due time for impacting said movable beam and performing a strong second and ultimate compacting step of the powder material immediately after the elastic return of the powder material; and hydraulic circuit means for timely controlling and energizing all the pairs of said hydraulic piston means, said hydraulic circuit means, interconnecting all the pairs of said hydraulic piston means.

4,363,613
APPARATUS FOR FORMING PROTUBERANCES ON A LINE

Larry W. Stelck, 116 Easy Street Ct., Edmond, Okla. 73034

Filed Jan. 9, 1981, Ser. No. 223,732
Int. Cl.³ B29D *31/00*; B29C *25/00*
U.S. Cl. 425—237 14 Claims



1. An apparatus for forming protuberances on a line, comprising:

heating means for heating the line; and

squeezing means for compressing portions of the heated line so that other portions of the line are forced outward of said compressed portions to form protuberances with respect thereto, said squeezing means including:

first roller means including a first surface defining a first groove extending perimetrically around said first roller means, said first surface having a plurality of cavities disposed therein;

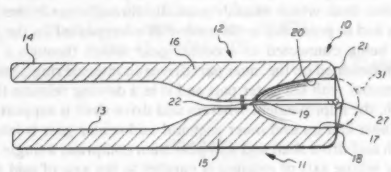
second roller means including a second surface defining a second groove extending perimetrically around said second roller means, said second surface having a plurality of cavities disposed therein; and

support means for retaining said first and second roller means in adjacent relation so that said first and second grooves are substantially aligned.

4,363,614
DUMPLING OR RAVIOLI PRESS

Tadeusz Zaremba, 2602 Haverhill, Houston, Tex. 77008

Filed May 18, 1981, Ser. No. 264,298
Int. Cl.³ B29C *1/00, 15/00, 17/10, 24/00*
U.S. Cl. 425—298 8 Claims



1. A combined press and cutter for preparation of filled dough products of the dumpling or ravioli type, comprising

a pair of forming and cutting members having hinges interconnecting the same at one end and having operating handles at the other end for opening and closing thereof,

each of said members having a mold cavity cooperable with the cavity on the other member and defining a cavity for a filled dough product when closed,

each of said cavities being open to the end of said members adjacent to said hinges and providing an opening from said dough product cavity when said members are closed,

cooperable cutting means on each of said members at the periphery of each of said cavities,

whereby a flat or rolled dough product can be placed across both of said cavities when said members are opened, and a filling placed thereon, and closing movement of said members brings the same together to force said dough and filling into said cavities, sealing the peripheral edge

thereof, and said cutting means being operable to cut the excess dough from the product, with said last named opening permitting expansion of said dough filled product to complete the forming thereof without bursting.

4,363,615

DRIVABLE ROLL OF CONTROLLABLE FLEXURE, PARTICULARLY FOR MACHINES FOR THE PRODUCTION AND PROCESSING OF WEBS OF PAPER OR PLASTIC

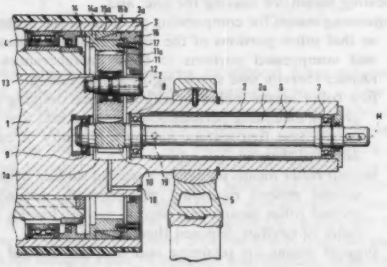
Walter Bolender, Erkrath, Fed. Rep. of Germany, assignor to ER-WE-PA Maschinenfabrik u. Eisengiesserei GmbH, Erkrath, Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,253

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1980, 3038587

Int. Cl.³ B30B *3/00*

U.S. Cl. 425—363 **4 Claims**



1. In a drivable roll of controllable flexure, particularly for machines for the production and processing of webs of paper or plastic, which comprises a substantially cylindrical inner part which through journals is firmly supported on a bearing surface, and a tubular outer part which surrounds the inner part and is supported at both ends on the inner part for rotation about the cylinder axis, there being disposed on the inner part along a generatrix means for the generation of compulsive forces acting radially between the inner part and the outer part, a drive shaft which extends coaxially through one of the journals and in proximity to its outer end is supported on the journal being connected to a center gear which through a gear train mounted on the inner part drives an internal ring gear that is coaxial with the outer part and is in a driving relation therewith, the improvement wherein said drive shaft is supported at its inner end on said inner part and said center gear is integral with said drive shaft and said gear train comprises a single idler gear whose axis of rotation is parallel to the axis of said drive shaft, and whose teeth have a crest which arcuately slopes downwardly on either side in the direction of the axis of rotation, said internal ring gear being set into the outer part and secured through clamping means to the internal surface of said outer part.

4,363,616

MACHINE AND PART THEREFOR

David H. Thomas, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

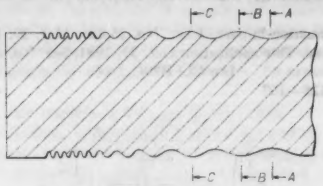
Filed Jun. 6, 1977, Ser. No. 803,781

Claims priority, application United Kingdom, Jun. 18, 1976, 25348/76; Nov. 29, 1976, 49621/76

Int. Cl.³ B29D *7/14*

U.S. Cl. 425—339 **16 Claims**

1. A sheet moulding machine comprising at least one roller and adjacent cooperating surface located so that sheet is able to be extruded between the roller and the surface, the surface of the roller being wave-shaped along at least part of its longitudinal axis, the wave lengths decreasing progressively from the mid-point of the longitudinal axis at least part of the way towards each end of the roller and the waves having substantially constant amplitude.



4,363,617

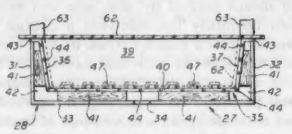
VACUUM MOLD FOR PLASTICS

Franklin D. Hirsekorn, 105 Rosamond, Houston, Tex. 77076

Filed Jul. 17, 1981, Ser. No. 284,352

Int. Cl.³ B29C *17/04*

U.S. Cl. 425—388 **13 Claims**



1. A vacuum forming mold for forming sheet plastic into bed liners for the beds of pick-up trucks, comprising

an open top rectangular box-shaped mold having a hollow wall construction with an outer supporting wall and an inner wall spaced thereform with space therebetween adapted to be subjected to vacuum for vacuum forming sheet plastic,

said inner mold wall having a bottom wall, side walls and end walls,

said side walls having a side to side width to accomodate the standard width of the bed of a pick-up truck of United States or foreign manufacture,

said mold having a length between the end wall thereof at least equal to the maximum length of the bed of a pick-up truck of United States or foreign manufacture, respectively,

a plurality of removable mold parts adapted to be secured on said inner mold wall and having a size and shape corresponding to features of a selected make of pick-up truck,

said inner mold wall having a plurality of small holes therein uniformly spaced on said bottom wall and spaced around the edges of said removable mold parts, whereby the application of a vacuum to the space between said outer and inner walls is effective to draw a sheet of heated plastic into intimate contact with said inner wall and the surface of said removable mold parts, and

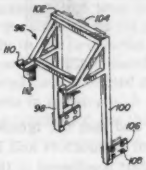
said outer wall having an opening for application of a vacuum thereto.

4,363,618

TRIANGULAR TRUSS SCREED HAVING AN END MOUNTED GUIDE BRACKET FOR ENGAGING A WALL-MOUNTED SUPPORT MEMBER

J. Dewayne Allen, Paragould, Ark., assignor to Allen Engineering Corporation, Paragould, Ark.

Division of Ser. No. 34,171, Apr. 26, 1979, Pat. No. 4,316,715. This application May 15, 1981, Ser. No. 264,053
Int. Cl.³ E01C *19/38*
U.S. Cl. 425—458 8 Claims



6. A screed for leveling freshly poured concrete lying in an area between opposing side forms to produce a smooth, finished concrete surface, said screed comprising:

a. a triangular truss frame having first and second ends and a top support member forming the apex of said triangular truss;

b. front and rear screed blades coupled in a spaced apart relationship to the lower portion of the front and rear of said frame for leveling the upper surface of the concrete;

c. first and second vertically oriented end brackets coupled to the first and second ends of said frame and including front and rear vertically extending, spaced apart side members, said first and second end brackets including an upper section extending above said top support member and including a horizontal strut extending between said front and rear side members within the upper section of said bracket to maintain a predetermined horizontal spacing therebetween;

d. a detachable guide bracket coupled to said first end bracket for supporting and guiding one end of said screed along a horizontally oriented guide member coupled to the wall of a building at a selected vertical position well above the concrete surface, said guide bracket including:

i. a first vertically oriented side member including an upper section;

ii. a second vertically oriented side member spaced apart from said first side member by a distance equal to the spacing between the front and rear side members of said first end bracket and including an upper section;

iii. a spacing member coupled to the first and second vertically oriented side members within the upper section of said guide bracket for maintaining a predetermined horizontal spacing therebetween, said spacing member further including a lip extending under and around the horizontal strut of said first end bracket for locking together the horizontal strut of said guide bracket and the spacing member of said first end bracket;

iv. means for detachably coupling said first and second side members of said guide bracket to said front and rear side members of said first end bracket; and

v. guide means laterally extending from the upper sections of said first and second side members of said guide bracket for contacting said wall-mounted guide member to support the first end of said screed at a predetermined desired vertical position as said bracket is laterally translated along the length of said guide member,

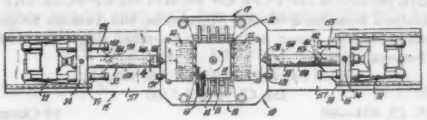
whereby the weight of the first end of said screed is transferred from said first end bracket through said guide bracket to said wall-mounted guide member to support the weight of the first end of said screed at a level above the top support member of said screed.

4,363,619

APPARATUS FOR MAKING WIDE MOUTH CONTAINER

John J. Farrell, Greenbrook, N.J., assignor to Farrell Patent Company, Middlesex, N.J.

Filed Jul. 28, 1980, Ser. No. 172,735
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—525 8 Claims



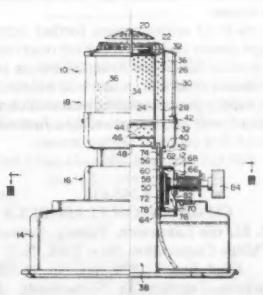
1. An apparatus for making a wide mouth container comprising means to injection mold a parison in a parison mold having a mouth portion and a body portion with said mouth portion having a greater diameter than said body portion, said parison mold comprising a movable mold means, a container mold, said parison mold comprising a cylindrical member and a core rod disposed in said parison mold so as to form a cavity therebetween in which the parison is molded, and means to move said parison mold comprising means to move said cylindrical member along said core rod so as to permit the parison to be formed against the walls of the container mold, said cylindrical member being formed with a flange, and a flange surrounding said core rod and being opposed to said cylindrical member flange so as to form a parison portion interconnecting the parison mouth portion and the parison body portion, and means to blow mold the parison to form the container and means to move said parison mold and said cylindrical member flange to permit the parison to be blow molded against the inside of the container mold and the cylindrical member flange, further comprising means operably associated with said cylindrical member flange to provide fluid pressure between the cylindrical member and the parison.

4,363,620

FIRE EXTINGUISHING DEVICE FOR OIL BURNER

Kazuharu Nakamura, Nagoya; Yutaka Nakanishi, Kounan, and Toshihiko Yamada, Toyoake, all of Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed Dec. 1, 1980, Ser. No. 211,972
Int. Cl.³ F23H *5/00*
U.S. Cl. 431—33 5 Claims



1. A fire extinguishing device for an oil burner comprising:

a wick receiving chamber having a width larger than the thickness of a wick received therein;

an air chamber disposed adjacent to said wick receiving chamber and having an opening communicated to said wick receiving chamber; and

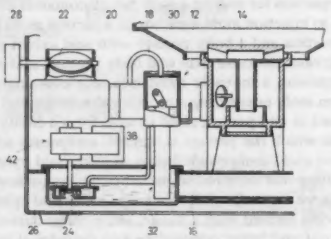
a valve means provided at said air chamber, said valve means being actuated corresponding to the movement of said wick so as to allow said air chamber to be communicated therethrough to an ambient atmosphere when raising said wick and to allow said air chamber to be shut off from an ambient atmosphere when lowering said wick.

4,363,621

OIL BURNER OF TYPE OF PUMPING UP FUEL OIL

Kazuharu Nakamura; Motoki Matsumoto, and Akinobu Kondo, all of Nagoya, Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed Jun. 11, 1980, Ser. No. 158,534
Int. Cl.³ F23K *5/00*
U.S. Cl. 431—90 **18 Claims**



1. An oil burner of the type of pumping up a fuel oil comprising:

a combustion means;

an air supply means for supplying an air to said combustion means;

a first oil level setting means of an airtight type for keeping the surface of a fuel oil introduced therein constant at a predetermined level, said first oil level setting means including a fuel oil reservoir connected through a fuel oil supply pipe to said combustion means and communicated at the upper space portion thereof through a ramification pipe to said air supply means so that the pressure of an air flowing through said air supply means may be applied onto the surface of a fuel oil in said reservoir;

a second oil level setting means installed at a position below said first oil level setting means which keeps the surface of a fuel oil therein substantially constant at a predetermined level;

a pumping-up means for drawing up a fuel oil supplied from said second oil level setting means to said first oil level setting means;

said first oil level setting means further including an overflow pipe means connected to said reservoir which has an upper portion for overflowing an excess of fuel oil introduced in said reservoir positioned below the end of said fuel oil supply pipe extending into said combustion means and has a lower end immersed in a fuel oil to be pumped up to said first oil level setting means.

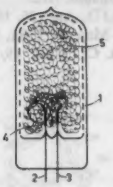
4,363,622

COMBUSTION FLASHBULB

Aloysius M. M. van Laarhoven, Tilburg, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,538
Claims priority, application Netherlands, Jun. 20, 1978, 7806616
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—362 **3 Claims**

1. A combustion flashbulb having a sealed vacuum-tight light-pervious lamp envelope which is filled with an oxidizing gas and a mass of actinically-combustible metal strips, in which current conductors extend at a distance from each other from outside the envelope through the wall thereof into the lamp envelope and are there each in contact with the mass of metal strips, said bulb having means to electrically ignite the bulb, characterized in that the current conductors inside the lamp envelope are coated at least locally with a dispersion of a metal



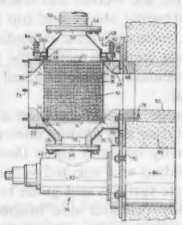
powder in a binder and that the igniting means of the bulb consist of the current conductors and a part of the mass of metal strips, which part is adhered to the current conductors by means of the dispersion of metal powder in a binder.

4,363,623

CASINGS FOR HEAT EXCHANGERS AND BURNER/RECUPERATOR ASSEMBLIES INCORPORATING SUCH CASINGS

Heinz Brune, P. O. Box 3201, Station C, Hamilton, Ontario, Canada (L8H 7K6)

Division of Ser. No. 10,186, Feb. 7, 1979, Pat. No. 4,262,740.
This application Mar. 9, 1981, Ser. No. 241,892
Int. Cl.³ F24H *1/00*; F23D *11/44*
U.S. Cl. 432—219 **2 Claims**



1. A recuperative burner assembly for use with a heat exchanger core comprising a rectangular parallelopiped of ceramic material and having within itself separate first and second flow paths which are in heat exchange relation with one another and at right angles to one another, the assembly comprising:

assembly mounting means for mounting the assembly to a furnace wall, the means having therein two spaced apertures for registry respectively with a burner tile delivering combusted gases to the furnace and a flue tile receiving hot flue gases from the furnace;

enclosing means for the said core comprising a body of ceramic material having therein a parallelopiped shaped core space receiving the said core and mounting it therein, the ceramic body having a first inlet opening thereto and a first outlet opening therefrom for burner combustion air and having first passage means connecting said first inlet means, the said core space and the said first outlet means for the passage of the said combustion air;

the said first inlet opening also constituting an opening through which the exchanger core is inserted into and removed from the core space;

the ceramic body having a second inlet opening thereto and a second outlet opening therefrom for hot flue gas from the furnace and having second passage means connecting

the said second inlet, the said core space and the said second outlet for the passage of the said hot flue gas;

the enclosing means also comprising a metal casing enclosing the ceramic body, connected directly to the said assembly mounting means to register with the flue tile aperture therein and having a removable cover providing the said first inlet;

the metal casing having at the said first outlet therefrom mounting means for a burner body and the assembly also comprising:

a fuel burner having its body connected directly to the said first outlet mounting means and to the said assembly mounting means, the burner inlet for combustion air being connected directly to the first outlet mounting means to receive heated combustion air therefrom and having its outlet for combusted fuel connected directly to the assembly mounting means in registry with the burner tile aperture to deliver the combusted gas thereto.

4,363,624

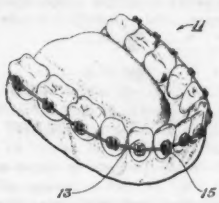
METHOD OF AFFIXING A DENTAL APPLIANCE

Reece W. Johnston, Fort Worth, Tex., assignor to Advance Dental Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 83,460, Oct. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 883,408, Mar. 6, 1978, Pat. No. 4,200,980. This application Oct. 9, 1980, Ser. No. 195,661

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—9 **17 Claims**



1. A method of affixing a dental appliance to at least one tooth, comprising the steps of:

a. effecting on a predetermined etched and dried surface of the tooth to which a portion of a dental appliance is to be bonded a first layer of a substantially uniform admixture of two reactants of a three-reactant system consisting essentially of a bonding resin that is hydrolysis resistant, that is partially polymerized and that will polymerize further in the presence of a catalyst and an initiator to bond in the presence of acids and enzymes in the mouth and selected from the class consisting of epoxy resin, urethane resin, methacrylate resin, vinyl ester resin, and acrylate resin; a catalyst that will affect polymerization of said bonding resin and selected from the class consisting of benzoyl peroxide, and methyl ethyl ketone peroxide; and an initiator selected from the class consisting of N,N-dimethyl-para-toluidine, N,N-dimethyl aniline, and cobalt naphthenate; said two reactants including said bonding resin and either one said catalyst or initiator that will affect polymerization of said bonding resin;

b. effecting on a cleaned and dried surface of at least a portion of a dental appliance that is to be bonded to said tooth, a proper viscosity second layer of a substantially uniform admixture of two reactants of said three-reactant system, said two reactants including said bonding resin and the other of said initiator or said catalyst; and

c. positioning said at least a portion of said dental appliance adjacent said surface of said tooth wherein said two layers containing said bonding resin, catalyst and initiator are brought together to obtain polymerization of said bonding resin and hence the necessary bonding of said at least a portion of the dental appliance to the surface of the tooth; said proper viscosity being obtained by a filler added to said second layer to obtain the desired viscosity of said resin, to avoid creep and to obtain the desired wettability of said tooth to said three reactants.

4,363,625

DENTAL TECHNICIANS TOOL AND TOOL RETAINER

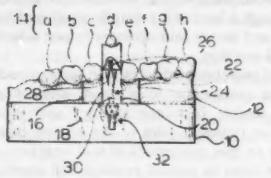
Mesrop der Avanessian, 838 Portola, Glendale, Calif. 91206

PCT No. PCT/US80/01153, § 371 Date Aug. 29, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO82/00757, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 29, 1980, Ser. No. 261,125

Int. Cl.³ A61C *19/00*

U.S. Cl. 433—74 **24 Claims**



1. Dental technician's tool adapted for the rapid and accurate positioning of a tooth model die repetitively on a model base support, comprising an axially elongated member having an upwardly extended head portion engageable with said tooth model die, a downwardly tapered bottom portion receivable in said base support, and a downwardly diminishing intermediate portion of cusped transverse cross-section arranged to engage said base support above the member bottom against cocking or rotation of said tooth die in mounted position on said model base support, but in repetitively vertically separable relation, said member head portion being generally cylindrical about the member axis and rising from a transverse shoulder formed on said member; said bottom portion being coaxial with said head portion and tapered at a first angle relative to the member axis; said intermediate portion being frusto-conically tapered downwardly from said transverse shoulder at a second larger angle relative to said member axis and vertically defines a plurality of circumferentially spaced surface rounded splines disposed at a third still larger angle relative to said member axis for spline differential taper regression vertically into said intermediate portion in inwardly tapered cusp-forming relation along the length of said intermediate portion.

4,363,626

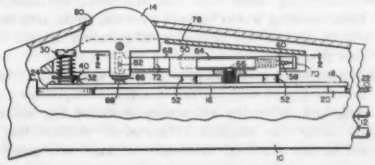
DENTAL SYRINGE

Manfred Schmidt; Gerd Hoyer; Hermann Leiberich, all of Karlsruhe, and Helmut Pietschmann, Karlsbad, all of Fed. Rep. of Germany, assignors to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 149,950

Int. Cl.³ A61C *1/10*

U.S. Cl. 433—85 **7 Claims**



1. A dental syringe including means for selecting and con-

trolling the flow of air, water and spray from the syringe comprising:

(a) a hand held housing;

(b) a support within said housing;

(c) a movable operator carried by said support, said operator being selectively movable along a path of either side of a neutral position;

(d) a control member journaled to said support, at least a portion of said control member extending through said housing for manipulation by a finger or thumb of the hand holding the syringe;

(e) said operator having an elongated opening in one end extending generally normal to the path traveled by said operator;

(f) an off center pin on said control member captured in said elongated opening so that movement of said control member through a limited arc length about said journal drives said pin and moves said operator to one side or another of a neutral position;

(g) a pair of switches carried by said support and adapted for operative connection to air and water control valves located remote from the syringe, said switches being located on opposite sides of the neutral position of said operator so that movement of said operator in a selected direction from its neutral position will operate a selected one or another of said switches to permit the opening of a selected one of the remote air and water control valves;

(h) means associated with said operator for generating an electrical signal which varies in proportion to the distance moved by said operator from its neutral position, said signal being utilized to determine the amount of the opening of the selected control valve; and

(i) bias means urging said operator to its neutral position.

4,363,627

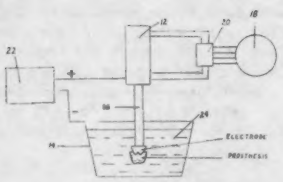
METHOD OF FABRICATING A DENTAL PROSTHESIS

Alfred S. Windeler, 2828 Tara Trail, Xenia, Ohio 45385

Filed Oct. 20, 1980, Ser. No. 198,480

Int. Cl.[3] A61C *13/00, 5/10*

U.S. Cl. 433—167 **1 Claim**



1. A method of fabricating a dental prosthesis, at least the major portion of which is a metallic element configured for wearing in contact with a finite area within the oral cavity of a patient, said method comprising the steps:

(a) fabricating a rough cast prosthesis by the steps:

(a-1) pouring an upper and a lower dental cast in impressions taken in the oral cavity of a patient, one of said dental casts including the finite area in contact with which said prosthesis is to be worn;

(a-2) mounting said dental casts in a dental articulator and hand forming a wax pattern over the finite area on said dental cast to the desired configuration of said rough cast prosthesis;

(a-3) removing said wax pattern from said dental cast and investing said wax pattern in a pliable refractory material, and, after the refractory material has solidified, elevating the ambient temperature surrounding said refractory material to evaporate said wax pattern to leave a cavity mold in said refractory material;

(a-4) casting a rough prosthesis in said cavity mold by injecting a high temperature molten metal which is allowed to solidify into said rough cast prosthesis which is then removed from said cavity mold;

(b) forming an accurate metallic electrode by electroforming a metal into an impression taken in the oral cavity of said patient, said electrode to be configured to the finite area in the oral cavity of said patient in contact with which said prosthesis is to be worn; and,

(c) in an electric discharge machine, mounting said rough cast prosthesis and said electrode in linear spaced alignment with said electrode in alignment with the corresponding finite area of said rough prosthesis, and finish machining said finite area of said rough prosthesis to the configuration of said electrode by electric discharge machining.

4,363,628

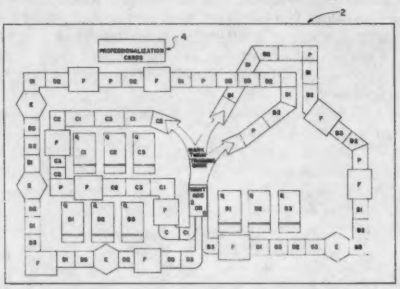
BANK TRAINING DEVICE

C. Virginia Kirkpatrick, and Grace E. Watson, both of St. Louis, Mo., assignors to Mark Twain Bancshares, St. Louis, Mo.

Filed Jun. 8, 1981, Ser. No. 271,796

Int. Cl.[3] G09B *19/00;* A63F *3/00*

U.S. Cl. 434—107 **10 Claims**



1. A device for training bank employees comprising a board means which has marked spaces in the shape of at least two connected continuous circuits extending about the board, wherein certain of said spaces are designated to require a player to answer questions from specific question and answer cards which are grouped in different sets for association with each of the circuits; a chance means; and means for marking a player's position on said board.

4,363,629

HYDRAULIC SYSTEM FOR OUTBOARD MOTOR WITH SEQUENTIALLY OPERATING TILT AND TRIM MEANS

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

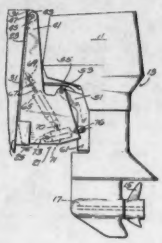
Filed Sep. 2, 1980, Ser. No. 183,209

Int. Cl.[3] B63H *5/12*

U.S. Cl. 440—61 **10 Claims**

1. A marine propulsion device comprising transom bracket means adapted to be connected to a boat transom, a stern bracket, first pivot means connecting said stern bracket to said transom bracket means for pivotal movement of said stern bracket relative to said transom bracket means about a first pivot axis which is horizontal when said transom bracket means is boat mounted, a swivel bracket, second pivot means connecting said swivel bracket to said stern bracket below said first pivot means for pivotal movement of said swivel bracket with said stern bracket and relative to said stern bracket about a second pivot axis parallel to said first pivot axis, a propulsion unit operable to provide forward and reverse propulsion and including, at the lower end thereof, a rotatably mounted propeller, means pivotally connecting said propulsion unit to said swivel bracket for steering movement of said propulsion unit

relative to said swivel bracket about a generally vertical axis and for common pivotal movement with said swivel bracket in a vertical planes about said first and second horizontal axes, a trim cylinder-piston assembly pivotally connected to said stern bracket and to said swivel bracket, a tilt cylinder-piston assembly pivotally connected to said transom bracket means and to said stern bracket, a source of pressure fluid, and a fluid conduit system communicating between said source of pressure



fluid and each of said tilt cylinder-piston assembly and said trim cylinder-piston assembly and including means operable, during upward tilting and reverse propulsion of said propulsion unit, for causing initial full extension of said trim cylinder-piston assembly, followed by extension of said tilt cylinder-piston assembly and, during downward tilting and reverse propulsion of said propulsion unit, for causing initial full contraction of said tilt cylinder-piston assembly, followed by subsequent contraction of said trim cylinder-piston assembly.

4,363,630

SHIP'S HULL WITH A HELICAL CHANNEL AHEAD OF EACH PROPELLER AND METHOD OF ESTABLISHING THE SHAPE OF THE SAME

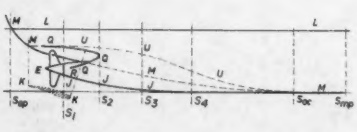
Giovanni B. T. Di Vigano, 30 Via Pusiano, Milano, Italy

Continuation-in-part of Ser. No. 671,747, Mar. 30, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,925

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1975, 2514784; Aug. 16, 1975, 2536425

Int. Cl.[3] B63H *5/16*

U.S. Cl. 440—69 49 Claims



1. A method of establishing the configuration of the underwater afterbody of the hull of a screw-propeller-driven ship provided with a helical channel for guiding the flow of water relative to the advancing hull towards a propeller when the ship is under way, comprising the performance of the basic steps of measuring the water flow relations at the propeller disc location of a model of a proposed hull, then modifying the model to optimize the shape of the underwater afterbody of the hull, and finally, after repetition of the measuring and modifying steps as found necessary or desirable, establishing a hull afterbody configuration with more favorable water flow relations at the propeller disc, in which method there is the improvement consisting in that:

the measurement of the flow relations at the location of the propeller disc of a model is a measurement of the tangential and axial velocity components (V_t,V_a) of water flow entering the propeller disc when no propeller is present at enough points around the propeller disc to establish a characteristic curve which gives the incident flow velocity vector (V_s) against a blade of a propeller of a selected configuration at a selected operating speed of revolution at a radius (r_q) value typical for effective thrust development, expressed in coordinates of tangential and axial vector components (V_q,V_a), disregarding any radial components, for various values of the angular position of a propeller blade around the propeller axis;

there are established, for comparison with results of said flow relation measurement, the thrust values of the blade of a selected propeller for the full range of incident-flow vectors that are of interest;

the thrust value relations to incident-flow vectors are used to plot "isodyne" lines and said characteristic curve on the same vector field, to show incident flow of velocities at respective locations around the propeller disc in coordinates of tangential and axial flow velocity (V_q,V_a) and simultaneously to show the range of propeller blade thrust variation resulting from the same combinations of tangential and axial flow;

the step of modifying the tested model in respect of the position of the propeller disc and the location and shape of a helical channel and the cross-sectional taper of the stern portion of the hull on the thrust variation range of a propeller revolution is carried out by reference to the relation of corresponding modified characteristic curves to the propeller isodyne lines on a common vector field plot of tangential and axial flow velocity (V_q,V_a) and

the modifying of the model so as to reduce the thrust variation range of the propeller blade revolution is thereby carried out to an extent beyond which reduction would no longer be economically justified by the relation of construction complication to the degree of further reduction that is producible.

8. A hull for a ship having a pair of counter-rotating propellers on opposite sides of the lengthwise vertical median plane of the ship on the stern portion of the ship for driving the ship by rotation of the propellers, each on a propeller shaft, in the direction in which the propeller blades move downward when they are in the quadrant of their revolution directed towards said median plane, said hull including for each propeller shaft a shaft shroud body extending aft from a propeller shroud root bulging from the portion of the hull in which the hull cross-section below the waterline tapers towards the stern of the hull, and said hull being further provided with a pair of helical channels affecting the profiles of said shroud roots as well as of said hull portion and respectively leading to each propeller so as to lead water, during forward motion of the ship with a component of twist around the aft portion of the shaft shroud, to the path of the propeller blades, in the direction of twist that is contrary to the direction of revolution of the propeller, in which hull there is incorporated the improvement consisting in that:

the helical channel in each case terminates by merger into a clear annular space surrounding the propeller shaft shroud at a location where the channel profile (UQT) reaches substantial tangency to the aft end of an external hull skin surface (LQS) connecting the main portion of the hull to the propeller shaft shroud and the line (RQ) drawn to the place (Q) where said tangency is reached from the center of curvature (R) of the portion of the shaft shroud surface tangent to a vertical line on the opposite side of the shaft shroud, which line lies in an athwartship plane passing through said place of reaching tangency, runs, from above center of curvature, at an angle not more than 40° above the horizontal, nor more than 60° below the horizontal,

the stern portion of the hull aft of the merger of said helical channels into said clear annular spaces is not supported by any keel, fin or deadwood structure extending to the neighborhood of the plane of the bottom of the hull;

the most concavely bent portion of the profile of the helical channel is in each case near the point (P) of tangency thereto of a line drawn through the center of curvature of the profile, in the same athwartship vertical profile plane, of the part of the propeller shroud root tangent to a verti-

cal line, for all parts of the propeller shroud root having a profile passing through the vertical, and

the curvature of said most concavely bent portion of said profile does not decrease lengthwise of the channel towards the stern over the entire length of the helical channel.

4,363,631

STRUCTURAL ARRANGEMENT FOR OXIDE CERAMIC SHAFTS

Gert Wloka, Ostfildern, Fed. Rep. of Germany, assignor to Feldmühle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,330

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923075

Int. Cl.³ F16C *3/00*

U.S. Cl. 464—181 **4 Claims**

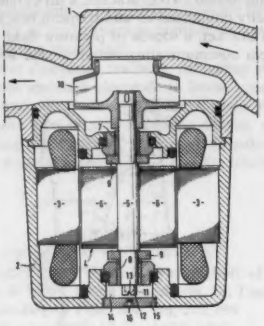
1. A shaft assembly for a glandless pump, particularly a circulating pump for heating installations, comprising:

a shaft consisting essentially of oxide ceramic material and having a pair of ends;

bearing means rotatively supporting said shaft intermediate said ends;

a projection provided on said oxide ceramic shaft at at least one of said ends outside of said bearing means;

a metal sleeve including a bottom part fixedly mounted on said projection of said shaft; and



engaging means on said bottom part of said sleeve for enabling said sleeve to be engaged to effect rotation of said shaft.

4,363,632

STABILIZED SOLUTION PRODUCING A ROMANOWSKY EFFECT

Elizabeth Custard, Mishawaka, Ind.; John C. Liao, Fort Worth, Tex., and John L. Ponzo, Mishawaka, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 28, 1981, Ser. No. 335,227
Int. Cl.[3] C09B 00/00
U.S. Cl. 8—506 10 Claims

1. In combination with a blood staining solution consisting essentially of Azure B and Eosin Y in methanolic solution, the improvement which comprises the presence of diethylamine hydrochloride in such solution.

4,363,633

REFERENCE LIQUID

Torben F. Christiansen, Holte, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed Jun. 24, 1980, Ser. No. 162,430
Claims priority, application Denmark, Jun. 28, 1979, 2747/79
Int. Cl.[3] G01N 27/56; C09K 3/00; G01N 33/48, 27/46, 27/50
U.S. Cl. 436—19 5 Claims

1. A process for calibration or quality control of instruments adapted to determine ionized calcium and pH in physiological liquids and containing a calcium-sensitive electrode and a pH-electrode, comprising subjecting the calcium-sensitive electrode and the pH-electrode to calibration or quality control with a reference liquid which, at a particular temperature simulates the physiological liquid's calcium ion activity and which in addition contains a pH-buffer consisting of a nitrogen-containing organic sulphonic acid and the salt of this acid, the acid having a pK in the range of 6.6–7.6 at 37° C., the buffering capacity of the pH-buffer in the reference liquid being from about 0.04 to about 0.10, and the ionic strength of the reference liquid being 0.15–0.17.

4,363,634

GLASS SUPPORT COATED WITH SYNTHETIC POLYMER FOR BIOPROCESS

Roy F. Schall, Jr., Glendora, Calif., assignor to Akzona Incorporated, Asheville, N.C.

Filed Jul. 18, 1980, Ser. No. 170,216
Int. Cl.[3] G01N 33/50, 33/54, 33/78, 33/58
U.S. Cl. 23—230 B 15 Claims

7. Bioprocess using a device containing at least one functional biomaterial, the improvement wherein the device comprises:

(a) transparent glass solid support means insoluble in a solvent selected from the group consisting of water and organic solutions which solid support means is coated with water-solvent-based synthetic polymeric film means; and

(b) one or more functional biomaterials adsorbed or covalently bonded to said polymeric films.

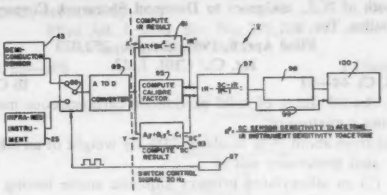
4,363,635

METHOD AND APPARATUS FOR MEASURING BREATH ALCOHOL

Donald G. Hutson, El Cerrito, Calif., assignor to Cal Detect, Inc., Richmond, Calif.

Filed Jan. 26, 1981, Ser. No. 228,119
Int. Cl.[3] G01N 27/62, 1/22
U.S. Cl. 436—132 10 Claims

1. A method of measuring the alcohol level of a breath sample containing alcohol and acetone, comprising calibrating an IR detector and an SC detector to establish their output responses to an alcohol standard; introducing to said IR detector a flowing stream of breath sample; measuring the output from said IR detector in response to its exposure to a portion of said breath sample; introducing to said SC detector a substantially static portion of said breath sample; measuring the output from said SC detector in response to its exposure to said portion of said breath sample; comparing said outputs, subtracting from the output from the IR detector an amount that is a function of the difference between the output from the IR



detector and the output from the SC detector, and deriving an output signal from the said difference indicative of the amount of at least one of alcohol and acetone in said sample.

4,363,636

PROCESS TO INCREASE THE EFFECTIVENESS OF BAGASSE AS A SOURCE OF ENERGY

Pierre E. Bouvet, Kukuihaele, and Norland L. C. Suzor, Paauilo, both of Hi., assignors to Davies Hamakua Sugar Company, a division of Theo. H. Davies & Co., Ltd., Paauilo, Hi.

Filed Oct. 15, 1981, Ser. No. 311,642
Int. Cl.[3] C10L 5/44, 5/08
U.S. Cl. 44—10 A 13 Claims

1. A process for increasing the effectiveness of bagasse as a source of energy in combination with a sugar mill operation in which bagasse from the mill is used as a boiler fuel for the sugar mill operation, comprising: subjecting a stream of wet bagasse from the mill to a primary drying operation in which said bagasse is contacted with a stream of flue gases from the boiler to reduce the moisture content of the bagasse to about 25–40%, size separating the resulting bagasse into a stream containing larger particle components of the bagasse and a secondary stream containing smaller particle components of the bagasse, subjecting said secondary stream of particles to a secondary drying operation in which said particles are contacted with a stream of flue gases from the boiler to reduce their moisture content to about 8 to 14% and densifying the resulting dried bagasse from the secondary drying operation into compacted shapes suitable for boiler firing.

12. A process for increasing the effectiveness of bagasse as a source of energy in combination with a sugar mill operation in which bagasse from the mill is used as a boiler fuel for the sugar mill operation, comprising: subjecting a stream of wet bagasse containing coarse and fine particles from the sugar mill to a drying operation in which said bagasse is contacted with a stream of hot flue gases from the boiler and drying said fine particles to a moisture content of about 8–14%, separating the dried fine particles from the coarse particles and densifying said fine particles at a moisture content of about 8–14% into compacted shapes for use as fuel.

13. Fuel pellets produced by the process of claim 12 comprising compressed bagasse particles, in the absence of added binding agent, said pellets being of approximately ¼ to ⅜ inch in diameter and approximately 1.5 inches maximum length, said pellets having a bulk density of about 40 to 50 pounds per cubic foot with individual pellets having a specific density of about 80 to 90 pounds per cubic foot, and said pellets developing a B.t.u./lb. of about 7500 to 8000 B.t.u./lb. upon burning.

4,363,637
STABILIZED OIL SLURRIES OF CARBONACEOUS MATERIALS

Kathy A. Knitter, Morristown, and Jose L. Villa, Bridgewater, both of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 8, 1981, Ser. No. 252,023
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—51 10 Claims

1. An oil slurry of solid particulate carbonaceous material having a mixture of

(a) from about 99% to about 75% by weight of an alkoxylated quaternary salt of

(1) an alkoxylated primary aliphatic amine having from about 7 to about 29 carbon atoms and from about 2 to about 50 moles of an alkylene oxide having 2 to 3 carbon atoms per mole of amine, and

(2) a quaternarizing agent, and

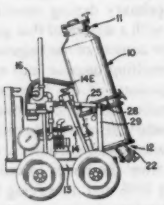
(b) from about 1% to about 25% by weight of a nitrogen base having from 0 to 9 carbon atoms,

the mixture being present in an amount sufficient to stabilize the slurry at elevated temperatures.

4,363,638
BIOMASS GAS PRODUCER

Eliseo O. Mariani, 3900 Mt. Vernon Ave., P.O. Box 5084, Alexandria, Va. 22305

Filed Apr. 22, 1981, Ser. No. 256,549
Int. Cl.[3] C10J *3/44*
U.S. Cl. 48—111 1 Claim



1. A biomass gas producer with tiltable gassifier comprising

a gassifier for performing endothermic chemical reactions of solid material having combustible gas forming and liquifiable constituants having a top charging end,

a mobile platform support means for said gassifier,

pivotally mounted support means carried by said platform supporting said gassifier for rocking movement along its vertical axis for tilting said gassifier from a substantially vertical endothermic reaction mode to a low height inclined charging mode for introducing the material to be fired,

a tiltable arm connected to said support means and said mobile platform, drive means connected between said tiltable arm and said mobile platform support to incrementally tilt the gassifer about its vertical support axis between a firing position and a loading waste discharge position,

and flexible hose means connected to said gassifier for directing the burnable gas produced by said gassifier to operate a gas fired prime mover.

4,363,639
GAS TRAP FOR REMOVING ATMOSPHERIC POLLUTANTS AND METHOD OF OPERATION

Richard J. Gladon, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 9, 1981, Ser. No. 242,055
Int. Cl.[3] B01D *47/02;* G01N *31/06*
U.S. Cl. 55—95 7 Claims

1. A gas trap, comprising,

a vertically disposed hermetic enclosure having top and bottom portions with upper and lower chamber portions disposed therebetween, and a restricted diameter vertical passageway extending between and connected to said upper and lower chamber portions, said passageway having an effective flow path diameter substantially less than that of said upper and lower chamber portions, and wherein said enclosure is adapted to contain a reacting fluid for reacting with the pollutants in the gas to be tested,

a discharge outlet and an inlet opening in said enclosure adjacent the top of said enclosure, said discharge outlet and inlet opening both being open for continuous gas flow into said input opening, through said enclosure and out of said discharge outlet,

a noncapillary tube hermetically sealed to said inlet opening extending downwardly therefrom through and in spaced relation with said chamber portions and said vertical passageway and terminating adjacent the bottom of said lower chamber portion,

a fritted material encasing the bottom of said tube, and

a reacting liquid filling said enclosure to a point including at least the lower portion of said upper chamber,

the space between said tube and said vertical passageway being less than the space between said tube and said lower chamber so that when gas is introduced into said tube and through said fritted material to enter said reacting fluid as gas bubbles, the upward movement of said gas bubbles will be prolonged by the restricted space between said passageway and said tube to provide a longer exposure time for said bubbles in said reacting fluid.

5. A method of removing pollutants from a continuous flow of gas comprising:

providing a hermetically restricted passageway with cross-sectional dimensions sufficiently small to prolong the free flow of gas bubbles rising in a liquid reactant and entering said passageway from a lower chamber of larger cross-sectional dimensions, but large enough to substantially prevent the creation of back pressure at the entrance to said passageway; said passageway being connected to a second, upper chamber of cross-sectional dimensions, substantially larger than said passageway, thereby forming a hermetic enclosure;

said lower chamber communicating with an inlet to said enclosure at a point below the entrance to said passageway and said upper chamber communicating with an outlet to said enclosure above said passageway,

maintaining said inlet and outlet open for continuous gas flow into said inlet, through said enclosure and out of said outlet,

filling said enclosure with a liquid reactant for reacting with said pollutants to a point including at least the lower portion of said upper chamber;

and introducing said continuous flow of gas into said enclosure below said passageway whereby gas bubbles are formed in and rise through said reactant;

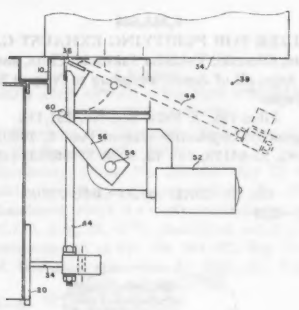
whereby the upward movement of said gas bubbles is prolonged by the restricted passageway, thus providing a longer exposure time for said bubbles to said reacting fluid.

4,363,640

ELECTROSTATIC PRECIPITATOR IMPACTOR ASSEMBLY

Leo Avondoglio, 19 Riversedge, Ivoryton, Conn. 06442

Filed Sep. 23, 1981, Ser. No. 304,857
Int. Cl.³ B03C *3/76*
U.S. Cl. 55—112 **3 Claims**



1. An electrostatic precipitator which comprises:

a collecting cell having at least some grounded electrodes, said cell including a frame carrying said electrodes;

a striker assembly to remove contamination from said collecting cell which includes an elongated first member having a major portion of the mass thereof disposed at a first axial extremity, and means for pivotally mounting said elongated first member at a second axial extremity, said means for pivotally mounting allowing motion of said first axial extremity of said elongated first member between first and second positions, said first position being at a higher elevation than said second position, said first axial extremity of said first elongated member being disposed in contacting relationship with said collecting cell in said second position and spaced apart from said collecting cell in said first position, cam means for urging said elongated first member into said first position, said cam means releasing said elongated first member for movement under the influence of gravity from said first position to said second position in at least one position of said cam means;

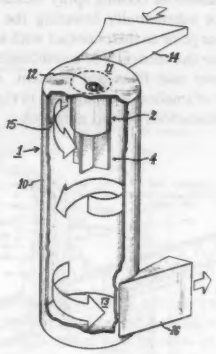
said precipitator further includes an elongated second member having a major portion of the mass thereof disposed at a first axial extremity and means for pivotally mounting said elongated second member at a second axial extremity, said elongated first member and said elongated second member being fixed together in generally coplanar relationship and mounted for movement about a common axis; and said collecting cell includes a striker bar extending across said collecting cell.

4,363,641

LIQUID DEGASSER WITH SELF-THROTTLING EXHAUST ORIFICE

George A. Finn, III, Dalton, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,704
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—205 **2 Claims**



2. In a centrifugal separator for removing entrained gas from a liquid including a body which is symmetrical about an axis, an inlet port proximate one end of the body for introduction of liquid to flow through said body to create an axial vortex, a liquid exit port at the other end of said body and a gas exhaust port at said one end, the improvement comprising:

duct means for conveying gas from said vortex to said gas exhaust port, said duct means including a resilient tube portion; and

cooperating coaxial inner and outer cylindrical members extending from said one end of the body into said vortex, said inner cylindrical member being fixed with respect to the body, said outer cylindrical member having exterior vanes in the region of the vortex and being supported on said inner member with a limited freedom of rotation about the common axis of the body and said members in response to the hydrokinetic action of liquid in said vortex region on said vanes, said cylindrical members having cooperating structural members for alternately squeezing and releasing said resilient tube portion of said duct means responsive to the direction and magnitude of rotation of said outer cylindrical member about said inner cylindrical member to cause said members to cooperatively constitute valve and valve actuator means;

whereby the hydrokinetic action of liquid on said vanes, which is inversely proportional to the quantity of gas in the vortex, will rotate said outer cylindrical member to overcome the resiliency of said resilient portion and constrict said duct means to shut off escape of gas or liquid when the quantity of gas is low and conversely will permit the resiliency of said resilient portion to overcome the hydrokinetic action to open said duct means when the quantity of gas is large.

4,363,642

CONTROL OF RANGE HOOD EMISSIONS

Lawrence E. Stahl, Rocky Mount, N.C., assignor to Hardee's Food Systems, Inc., Rocky Mount, N.C.

Filed Mar. 25, 1977, Ser. No. 781,418
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—233 **18 Claims**

1. Apparatus for control of range hood airborne emissions, comprising:

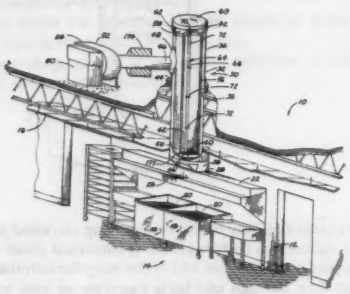
a mist eliminator fiber bed element;

a housing for said fiber bed element, having an inlet and an outlet;

gasket means sealing between said fiber bed element and the housing intermediate the inlet and the outlet, so that all airborne emissions entering the housing, from the range hood, must pass through said fiber bed element in order to reach said outlet;

an exhaust fan associated with said outlet;

airborne emissions cooling spray means associated with said inlet, for substantially lowering the temperature of said emissions prior to their contact with said fiber bed element to reduce the tendency of constituents of said emissions to bake onto said fiber bed element, and to decrease the number of smallest size particles in the emissions by effecting combinations of said particles;



means for perfusing the fiber bed element, in situ, successively with a liquid cleaning solution for saponifying fats and breaking-up char, then a liquid rinse for flushing out the spent liquid cleaning solution and its burden of saponified fats and char debris;

the perfusing means including control means arranged to operate said blower means automatically both while said perfusing means is perfusing the fiber bed element with said liquid cleaning solution and while said perfusing means is perfusing the fiber bed element with said liquid rinse; and

drain means from the housing for draining spent liquid cleaning solution and liquid rinse therefrom.

4,363,643

SUPPORT MEANS FOR FILTER MATERIAL IN A NON-ELECTRIC AIR CLEANER

Clifford B. Elbrader, Boone, and Jimmy L. Milum, Harrison, both of Ark., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 16, 1981, Ser. No. 312,152
Int. Cl.³ B01D *46/52*
U.S. Cl. 55—499 **5 Claims**

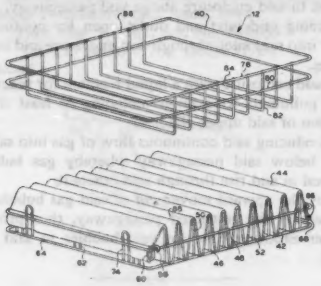
3. An air cleaner comprising:

a support frame;

a filter assembly insertable into said support frame,

said filter assembly comprising filter material and a wire-form means having a lower and upper portion for supporting said filter material;

said lower portion comprising means for attaching said filter material thereto, means for enabling the forming of said filter material into a plurality of pleats having tops and bottoms and for defining said tops of said pleats, and means for engaging said upper portion;



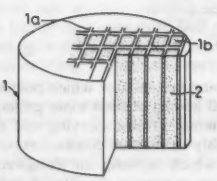
said upper portion comprising means for defining said bottoms of said pleats when said upper portion is engaged with said lower portion.

4,363,644

FILTER FOR PURIFYING EXHAUST GAS

Susumu Sato, Okazaki; Yukihisa Takeuchi, Chita, and Masahiro Tomita, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 3, 1981, Ser. No. 231,118
Claims priority, application Japan, Feb. 4, 1980, 55-12881; Jun. 20, 1980, 55-84198; Jul. 15, 1980, 55-96583; Jul. 21, 1980, 55-99639
Int. Cl.³ B01D *39/20;* C04B *21/06*
U.S. Cl. 55—523 **6 Claims**



1. A filter for purifying exhaust gas of an internal combustion engine comprising:

a rigid ceramic supporting member comprising at least one passage therethrough for flow of exhaust gas therethrough; and

porous ceramic filtering material filling said at least one passage and sintered to the walls thereof.

4,363,645

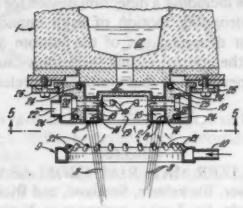
ANNULAR BUSHING FOR FORMING GLASS FIBERS

Arnold J. Eisenberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 137,669, Apr. 4, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 287,171
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **12 Claims**

1. A glass fiber-forming bushing comprising an annular

orificed bushing plate, a center portion positioned within the annular plate and at least one port opening from said center



portion into a manifold and at least one port opening from said manifold.

4,363,646

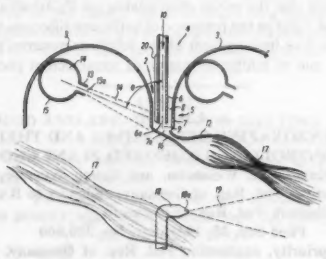
METHOD AND APPARATUS FOR PRODUCING MICROFILAMENTS

Leonard B. Torobin, c/o Materials Technology Corp., 2198 Princeton St., Sarasota, Fla. 33578

Continuation-in-part of Ser. No. 152,693, May 23, 1980, Pat. No. 4,303,431, which is a continuation of Ser. No. 59,297, Jul. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 937,123, Aug. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 944,643, Sep. 21, 1978, abandoned. This application Nov. 27, 1981, Ser. No. 325,594

Int. Cl.[3] C03B *37/04*

U.S. Cl. 65—5 18 Claims



1. A method for making microfilaments from an inorganic film forming material which comprises heating said material, forming a liquid film of said material across an orifice, applying a blowing gas at a positive pressure on the inner surface of the liquid film to blow the film and form an elongated hollow tube or cylinder, forming a thinned wall or weakened portion of the elongated hollow cylinder, subjecting the elongated hollow tube or cylinder during its formation to an external pulsating or fluctuating pressure field having periodic oscillations, said pulsating or fluctuating pressure field acting on said elongated hollow tube or cylinder to assist in its formation and to assist in the formation of a multiplicity of microfilaments and in detaching the microfilaments from said orifice.

4,363,647

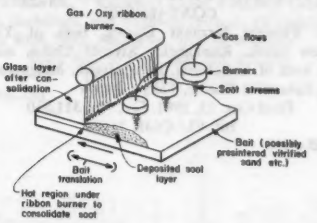
METHOD OF MAKING FUSED SILICA-CONTAINING MATERIAL

David L. Bachman, Lindley; William C. Lewis, Jr., Big Flats; Peter C. Schultz, and Francis W. Voorhees, both of Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 14, 1981, Ser. No. 263,418

Int. Cl.[3] C03B *19/06, 20/00*

U.S. Cl. 65—18.2 10 Claims



1. A method for preparing a fused silica-containing glass article of very high optical quality and having a large cross section or diameter, which comprises the steps of:

(a) depositing via flame hydrolysis/oxidation reaction a layer of fused silica-containing soot upon a supporting bait;

(b) essentially immediately thereafter applying a source of heat concentrated uniformly across the breadth of the soot deposit, but focused only over a relatively small area thereof, to raise the temperature thereof sufficiently to uniformly consolidate said small area of soot deposited into an essentially non-porous glass; and then

(c) cooling said glass to room temperature.

4,363,648

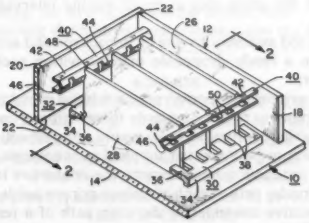
FLOATING VANES FOR FLAT PANEL DISPLAY SYSTEM

Roger A. Allaire, Big Flats, and Wendell S. Blanding, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 965,588, Dec. 1, 1978, Pat. No. 4,304,803. This application May 7, 1981, Ser. No. 261,658

Int. Cl.[3] C03B *23/20*

U.S. Cl. 65—42 4 Claims



1. A method of making an evacuated flat panel display device comprising, forming a face plate and a base plate from sheet glass, securing a plurality of slotted opposed supports in fixed position relative to said face plate and said base plate, positioning a plurality of longitudinally extending supporting glass sheets in transversely spaced-apart relationship within the slotted supports secured relative to one of said plates, assembling glass side and end panels upon said one plate, positioning said other plate upon said side and end panels and receiving portions of said supporting sheets within the slotted supports

positioned on said other plate, sealing said panels and said plates together to form an enclosed housing while permitting limited movement of said support sheets within said housing, and evacuating the interior of said housing and simultaneously engaging said face and base plates with said support sheets such that said support sheets support said face and base plates against the forces generated by the exterior atmospheric pressure.

4,363,649

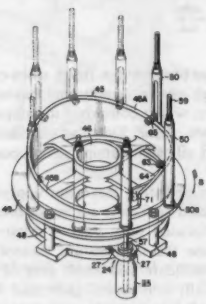
APPARATUS FOR INSPECTION OF GLASS CONTAINERS

Yoshihiro Yamato; Kazuaki Ogawa, both of Yokohama; Hiromasa Satoh, Kawaguchi; Kiyoshi Chiku, and Hideo Okada, both of Yokohama, all of Japan, assignors to Toyo Garasu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 311,010

Int. Cl.³ C03B *35/04*

U.S. Cl. 65—158 **4 Claims**



1. An apparatus for inspection of glass containers comprising:

a horizontal circular table revolvably supported to revolve about a vertical axis;

a guide ring disposed coaxially above and spaced apart from the circular table and joined integrally thereto to be revolvable unitarily therewith;

driving means for driving the table;

a rim-surface cam fixedly supported and comprising a vertical hollow cylinder disposed coaxially with the guide ring and having an upper rim surface forming an endless cam surface;

a plurality of guide cylinders fixedly supported in upright state on the guide ring at equal spacing intervals thereabout;

an impact rod assembly having an impact rod and accommodated in a freely droppable manner within each guide cylinder;

container grippers supported on the table at equal intervals therearound to revolve unitarily therewith and operating, as the table revolves, to successively grip respective glass containers to be inspected supplied in succession thereto from a production line, to carry the containers in a partially circular path as each container gripper holds upright its respective container in the drop path of a respective one of the impact rods, to release and reject the container if it fails to withstand impact by that impact rod, and to return the container, if thus withstands impact, to the production line;

a sector adjustably supported on the inner side of the rim-surface cam to adjustably set the height of drop of the impact rod;

first and second follower means rotatably supported on each impact rod assembly and adapted to travel respectively along the sector and the cam surface, the first follower means moving off a downstream end of the sector to permit the impact rod assembly to drop thereby to cause the lower end of the impact rod to strike against the inner side of the bottom of the corresponding container with a preset impact energy; and

control means including a detection device for detecting any abnormal dropping motion of each impact rod due to breakage or dropping out of the bottom of a defective container, the control means thereupon causing the container gripper holding that container to release and reject the same.

4,363,650

FERTILIZER MATERIAL FROM APATITE

Fredrik P. Glasser, Bucksburn, Scotland, and Richard P. Gunawardane, Kandy, Sri Lanka, assignors to National Research Development Corporation, London, England

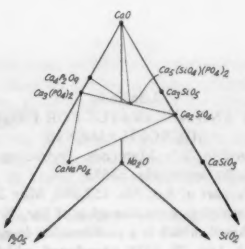
PCT No. PCT/GB80/00139, § 371 Date Apr. 30, 1981, § 102(e) Date Apr. 30, 1981, PCT Pub. No. WO81/00711, PCT Pub. Date Mar. 19, 1981

PCT Filed Sep. 8, 1980, Ser. No. 261,162

Claims priority, application United Kingdom, Sep. 7, 1979, 7931090

Int. Cl.³ C05B *13/00*

U.S. Cl. 71—36 **7 Claims**



1. A method of making a fertilizer material from hard mineral apatite rich in chlorine and/or fluorine, by roasting apatite at from about 880° C. to about 900° C. as a final temperature with a carbonate and/or aluminosilicate of an alkali metal in an amount such that the molar ratio apatite (as P_2O_5):alkali metal is 1: at least 3 and in the presence of sufficient siliceous material to keep the free-lime content of the fertilizer material below 2 weight % and to inhibit formation of tetracalcium phosphate.

4,363,651

4H-3,1-BENZOXAZINE DERIVATIVES AND THEIR USE FOR CONTROLLING UNDESIRED PLANT GROWTH

Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

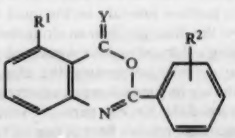
Filed Sep. 25, 1981, Ser. No. 305,860

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037970

Int. Cl.³ C07D *265/22;* A01N *43/86*

U.S. Cl. 71—88 **8 Claims**

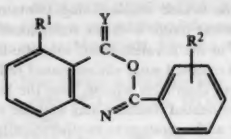
1. A 4H-3,1-benzoxazine derivative of the formula



(I)

where Y is oxygen or sulfur, R^1 is halogen and R^2 is halogen in the m- or p-position.

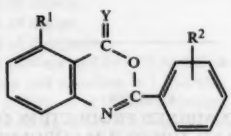
5. A 4H-3,1-benzoxazine derivative of the formula



(I)

where Y is oxygen or sulfur, R^1 is methyl and R^2 is fluorine, trifluoromethyl, trifluoromethoxy or chlorodifluoromethoxy in the m-position.

6. A 4H-3,1-benzoxazine derivative of the formula



(I)

where Y is oxygen or sulfur, R^1 is nitro and R^2 is trifluoromethoxy or chlorodifluoromethoxy.

4,363,652

PROCESS FOR THE PRODUCTION OF HIGH PURITY IRON POWDER

Miro F. Kowbuz, Tucson, Ariz., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 9, 1981, Ser. No. 329,354
Int. Cl.³ C22B *1/00, 5/00*
U.S. Cl. 75—0.5 AA **10 Claims**

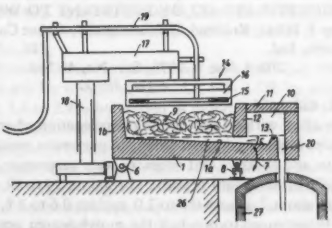
1. In a process for the recovery of metallic iron from an iron-bearing source which comprises the steps of:
   (a) grinding said iron-bearing source;
   (b) leaching the ground iron-bearing source in a caustic leach solution at an elevated temperature and pressure;
   (c) separating the impurities from the caustic leach residue;
   (d) reducing the iron in said caustic residue by treatment with hydrogen at an elevated temperature and pressure;
   (e) recovering the resultant metallic iron, the improvement which comprises subjecting said ground iron-bearing source in the caustic leach solution to a sparge with an oxygen-containing gas at sparging conditions prior to said caustic leach of said ground iron-bearing source.

4,363,653

METHOD AND APPARATUS FOR MELTING SOLID PIECES OF METAL

Staffan Granström, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Apr. 21, 1981, Ser. No. 256,138
Claims priority, application Sweden, Apr. 22, 1980, 8002993
Int. Cl.³ C21C *5/52*
U.S. Cl. 75—10 R **12 Claims**



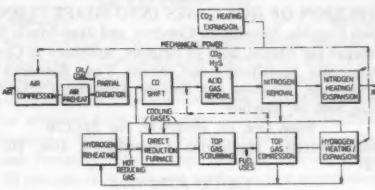
1. A method for melting solid pieces of metal, comprising charging said pieces in a basin having a refractory inside, and downwardly inductively heating the pieces in the basin by an electric AC induction heating means positioned above the basin and the pieces and so as to induce an AC current field in the pieces heating and progressively melting the pieces into a melt collecting in the basin's bottom.

4,363,654

PRODUCTION OF REDUCING GAS FOR FURNACE INJECTION

Geoffrey Frederick, 7 Knowsley Close, Pinkneys Green, Maidenhead, Berkshire, and Anthony Dwight, 19 Fernbrook Rd., Reading RG4 7HG, Berkshire, both of England

Filed Apr. 8, 1980, Ser. No. 138,624
Int. Cl.³ C21B *11/00*
U.S. Cl. 75—34 **10 Claims**



1. A process for producing a reducing gas for direct reduction furnaces and blast furnaces which comprises:
   (a) partially oxidising a feedstock selected from the group consisting of oil, coal, and coke and combinations thereof, in the presence of air and steam at a pressure of 1 to 50 bar and at a temperature of 300° to 1000° C. to produce a raw gas stream containing hydrogen, nitrogen, carbon monoxide, and other gases,
   (b) passing the raw gas stream over a shift catalyst at a temperature of 200° to 500° C. whereby carbon monoxide is substantially eliminated from the gas stream;
   (c) passing the gas stream through an acid gas removal stage wherein carbon dioxide and hydrogen sulfide are substantially removed from the gas stream, whereby a gas stream consisting essentially of hydrogen and nitrogen is produced;
   (d) drying the gas stream if there is water present;
   (e) passing the gas stream to a cryogenic nitrogen/hydrogen separator wherein the gas stream is cooled to a low temperature and a hydrogen-rich stream is separated from a nitrogen-rich stream;
   (f) heating the hydrogen-rich gas stream; and
   (g) injecting the hydrogen-rich stream into the furnace.

4,363,655

METHOD FOR OPERATING BLAST FURNACE

Motohiko Iizuka; Genji Nakatani, both of Fukuyama, and Sumiyuki Kishimoto, Hiroshima, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 186,406
Claims priority, application Japan, Oct. 8, 1979, 54/129619
Int. Cl.³ C21B *5/06*
U.S. Cl. 75—41 **2 Claims**

1. In a method for operating a blast furnace having a plurality of tuyeres around the periphery of the lower portion thereof and coupled to at least one hot stove for heating air to be blown into said blast furnace, which comprises:
   adding a blast furnace gas containing CO and H_2 to air to form a gas mixture; feeding said gas mixture into said hot stove to heat said gas mixture in said hot stove to thereby oxidize CO into CO_2 and H_2 into H_2O, to form a blast enriched with CO_2 and H_2O and further heated through said oxidation reaction; and blowing said blast through

said plurality of tuyeres into the lower portion of said blast furnace to bring said blast into contact with red-hot coke in the lower portion of the interior of said blast furnace to cause an endothermic reaction with said red-hot coke to thereby control the calorific value at the portion of the interior of said blast furnace around said tuyeres;

the improvement comprising:

the amount of said blast obtained from said hot stove blown into said blast furnace being an amount substantially equal to that of a blast which would be blown into said blast furnace without addition of a blast furnace gas, thereby decreasing the pig iron production from said blast furnace as compared to the pig iron production which would have been obtained if a substantially equal amount of a blast without addition of a blast furnace gas had been used, without deteriorating the furnace conditions.

4,363,656

INJECTION OF HOT GASES INTO SHAFT FURNACE

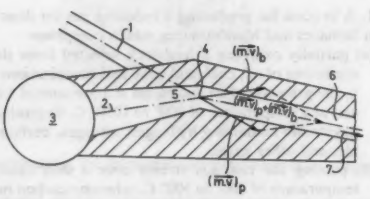
Nikolas Ponghis, Neuville-en-Condroz, and Jean-Marie Masuy, Jemeppe sur Meuse, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels and Societe Anonyme Cockerill, Seraing, both of, Belgium

Filed Dec. 10, 1980, Ser. No. 215,076

Claims priority, application Luxembourg, Dec. 10, 1979, 81976

Int. Cl.³ F27B *1/16*

U.S. Cl. 75—42 **4 Claims**



1. A method of injecting hot gases into a shaft furnace, comprising:

introducing a flow of gases to a tuyere from each of an inlet pipe and an outlet pipe emanating from a plasma oven, the longitudinal axis of the tuyere and the longitudinal axis of the inlet pipe forming a first angle, which first angle defines a first vector in combination with the mass flow and velocity of gas passing through the inlet pipe, the longitudinal axis of the tuyere and the longitudinal axis of the outlet pipe forming a second angle, which second angle defines a second vector in combination with the mass flow and velocity of gas passing through the outlet pipe, the resultant of the first vector and the second vector providing gas flow parallel to the longitudinal axis of the tuyere.

4,363,657

PROCESS FOR OBTAINING MANGANESE- AND SILICON-BASED ALLOYS BY SILICO-THERMAL MEANS IN A LADLE

Louis Boscaro, Aiguebelle; Michel Demange, Le Fayet; Jean-Philippe Bucher, Aiguebelle; Francis Dubrous, and Louis Septier, both of Le Fayet, all of France, assignors to Societe Francaise d'Electrometallurgie Sofrem, Paris, France

PCT No. PCT/FR80/00121, § 371 Date Mar. 6, 1981, § 102(e) Date Mar. 6, 1981, PCT Pub. No. WO81/00262, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 15, 1980, Ser. No. 253,521

Claims priority, application France, Jul. 17, 1979, 79 18985

Int. Cl.³ C22B *47/00*; C22C *28/00*

U.S. Cl. 75—80 **16 Claims**

1. A process for obtaining a manganese-based alloy by silicothermia in a ladle from a heated oxidized slag containing manganese oxide comprising:

(a) introducing the heated oxidized slag, containing from 10 to 40% manganese oxide with the manganese being present essentially in the divalent state, into the ladle;

(b) introducing a crushed solid silicon-based reducing alloy, containing more than 60% silicon, into the ladle;

(c) contacting the heated oxidized slag and the silicon-based reducing alloy with agitation to exothermically reduce the oxidized slag without the further application of heat from an external source;

(d) separating a slag which is substantially free of manganese from a metal having a manganese content of at least 60% and a silicon content within the range of 5 and 40% by decantation.

4,363,658

PROCESS FOR COMBINED PRODUCTION OF METAL ALLOYS AND ZIRCONIUM CORUNDUM

Boris A. Shushlebin, Sirenevy bulvar. 27, korpus 3, kv. 53; Nikolai A. Bogdanov, Dnepropetrovskaya ulitsa, 19, korpus 2, kv. 130, both of, Moscow; Viktor V. Tregubenko, ulitsa Zavodskaya, 6, kv. 2, Krasnogorsk Moskovskoi oblasti; Nikolai I. Subbotin, ulitsa Klubnaya, 9, kv. 3, and Mikhail V. Galkin, ulitsa Klubnaya, 4, kv. 1, both of Sysertsky raion, poselok Dvurechensk, all of U.S.S.R.

Continuation of Ser. No. 82,208, Oct. 5, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,931

Int. Cl.³ C22B *34/00*

U.S. Cl. 75—84 **2 Claims**

1. A process for combined production of a metal alloy containing zirconium, iron, silicon and aluminum and of zirconium corundum, comprising melting in a furnace a mixture of a zircon concentrate, an iron ore and aluminum taken in a ratio by weight of 51-69:9.9-16.5:19.8-34.8, respectively, at a temperature within the range of 1,950° to 2,000° C. to form a metal alloy consisting of Zr, Fe, Si and Al and a zirconium corundum, pouring the zirconium corundum from the furnace adding to the remaining alloy fluxes taken in an amount of 5 to 35 of the weight of the zircon concentrate and ferrosilicon taken in an amount of 3 to 102% by weight of silicon of the total weight of the zirconium concentrate and a substance selected from among ferrosilicomanganese, ferromanganese and metallic manganese taken in an amount of 3 to 26% by weight of manganese of the total weight of the zirconium concentrate, melting at a temperature of 1,950° to 2,000° C. to produce the metal alloy consisting of Zr, Fe, Si, Al and Mn and a waste slag substantially free of Zr and pouring the metal alloy and slag separately from the furnace.

4,363,659

NICKEL-BASE ALLOY RESISTANT TO WEAR

Anthony J. Hickl, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Jun. 4, 1979, Ser. No. 45,566

Int. Cl.³ C22C *30/00*

U.S. Cl. 420—454 **9 Claims**

1. An alloy with an outstanding combination of engineering properties including impact strength, corrosion resistance, hot hardness, and abrasive and adhesive wear resistance consisting essentially of, in weight percent: chromium 24 to 32, molybdenum 4 to about 7, silicon 0.6 to 2.0, carbon 0.6 to 1.8, boron 0.2 to 1.0, tungsten up to one-half the molybdenum content, iron up to 5, manganese up to 1.0, copper up to 3.0, cobalt 0.35 to 5.0 and the balance nickel and incidental impurities.

4,363,660

IRON-BASE ALLOY HAVING HIGH RESISTANCE TO MOLTEN ZINC ATTACK

Saburo Wakita, Ohmiya, and Akihiko Sakonooka, Ageo, both of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00060, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/02161, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 4, 1980, Ser. No. 217,015
Claims priority, application Japan, Apr. 4, 1979, 54-40616
Int. Cl.³ C22C *38/40*
U.S. Cl. 75—128 B 4 Claims

1. An iron-base alloy having high erosion resistance to molten zinc attack which essentially consists of (by weight);

0.01 to 2% of carbon;

0.01 to 2% of silicon;

0.01 to 2% of manganese;

1.5 to 5.5% niobium and 0 to 3% tantallum, wherein the total of niobium and tantallum is 1.5 to 6%;

totally 5.5 to 10% of at least one element selected from the group consisting of molybdenum and tungsten, but molybdenum content is at lesast 5.5%;

10 to 30% of nickel;

10 to 30% of cobalt;

10 to 25% of chromium; and

a balance which is iron and inevitable impurities.

4,363,661

METHOD FOR INCREASING MECHANICAL PROPERTIES IN DUCTILE IRON BY ALLOY ADDITIONS

Bela V. Kovacs, Bloomfield Hill, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 8, 1981, Ser. No. 252,110
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—130 R 9 Claims

1. In a method of making an as-cast ductile iron casting, wherein a basic melt of carbon, silicon, manganese and iron is treated with a nodularizing agent and cooled to provide a microstructure consisting substantially of a pearlitic matrix containing cementite and graphite nodules surrounded by ferrite, the improvement comprising:

alloying said melt with the following combination of pearlitic stabilizers in percentage weight of the melt: (a) at least one of 0.02–0.06% Sb and 0.02–0.08% Sn, (b) 0.001–0.0015% Ce and 0.001–0.0015% La, and (c) 0.5–1.0% manganese.

4,363,662

ABRASION RESISTANT FERRO-BASED SINTERED ALLOY

Kentaro Takahashi, Omiya; Takeshi Hiraoka, Ageo, and Shigeru Urano, Omiya, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,079
Claims priority, application Japan, May 17, 1979, 54/59733
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—243 1 Claim

1. An abrasion resistant ferro-based sintered alloy comprising 1.1 to 1.6% by weight of carbon, 1.5 to 3.5% by weight of chromium, 1.6 to 2.9% by weight of molybdenum, 1.0 to 3.0% by weight of nickel, 3.0 to 5.0% by weight of cobalt, 0.5 to 1.5% by weight of tungsten, 1.8 to 18.0% by weight of copper and the balance iron wherein said alloy contains particles of specific alloy comprising C-Cr-W-Co and ferromolybdenum particles are uniformly dispersed in the base structure comprising a mixture of pearlite, bainite and martensite and wherein nickel and cobalt are distributed around the particles of specific alloy and of ferromolybdenum alloy.

4,363,663

ANTIMICROBIAL SOLUTION

Nicholas J. Hill, 83 Lowell St., Andover, Mass. 01810

Continuation-in-part of Ser. No. 50,459, Jun. 20, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,104
Int. Cl.³ A01N *25/02*; C08K *3/30, 3/32*
U.S. Cl. 106—18.31 9 Claims

1. An antimicrobial solution comprising a microbiologically active organo sulfonyl ethylene dissolved in an organo phosphorus compound selected from the group consisting of organo phosphites and organo phosphonates.

4,363,664

NOVEL COMPOSITIONS AND PROCESSES

John W. Delaney, Fort Mitchell, Ky., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jan. 25, 1980, Ser. No. 115,543
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 44 Claims

1. A storage-stable concentrated free-flowing aqueous dispersion composition consisting essentially of by weight of the entire composition approximately 2.5 to approximately 50 percent of at least one colorless carbonless duplicating dyestuff precursor selected from the group consisting of phthalides, phenothiazines, fluorans, arylsulfonylmethanes, furopyridinones and furopyrazinones; approximately 0.1 to approximately 30 percent of at least one surface active agent selected from the group consisting of anionic surface active agents, nonionic surface active agents, cationic surface active agents and amphoteric surface active agents; and water; said composition optionally containing one or more of the following by weight of the entire composition: no more than 10 percent of a glycol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol and ethylene glycol monoethyl ether; and no more than 3 percent of an alkaline substance selected from the group consisting of triethanolamine, sodium carbonate and potassium carbonate.

4,363,665

NOVEL SAND/SILICATE COMPOSITIONS FOR FOUNDRY MOLDS/CORES

Gerard Barrier, and Jean-Pierre Blanc, both of Antony, France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 14, 1981, Ser. No. 283,137
Claims priority, application France, Jul. 18, 1980, 80 15875
Int. Cl.³ B28B *7/34*
U.S. Cl. 106—38.3 15 Claims

1. In a moldable composition of matter comprising an intimate admixture of sand, an alkali metal silicate, a hardening agent and a demolding agent; the improvement which comprises a demolding agent including a mixture of a finely divided alkaline earth metal oxide or carbonate and from 1 to 99% by weight thereof of a hydrated alumina having an average grain size ranging from 0.2 to 5μ.

4,363,666

REINFORCED CEMENT SHEET PRODUCT CONTAINING FIBERS OTHER THAN ASBESTOS, CLAY AND THICKENER

Robert M. Johnson, and Elmer M. Melling, both of Kenmore, N.Y., assignors to National Gypsum Company, Dallas, Tex.

Filed Feb. 11, 1981, Ser. No. 233,687
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 28 Claims

1. A fiber-cement product comprising by weight Portland cement in an amount of between about 40% and 80%, fibers other than asbestos in an amount of between about 1% and 15%, a thickener, and clay in an amount of between about 2% and 15% to coact with said thickener in an aqueous slurry containing said Portland cement and fibers to provide a sufficiently high drainage time for proper formation of a mat on a

screen and a smaller solids loss than can be obtained by the use of said thickener by itself.

4,363,667

CEMENTITIOUS COMPOSITION AND CEMENT PRODUCED THEREFROM

James D. Birchall, Mouldsworth; Kevin Kendall, Runcorn, and Anthony J. Howard, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 31, 1981, Ser. No. 249,635

Claims priority, application United Kingdom, Apr. 11, 1980, 8012101

Int. Cl.³ C04B 7/35

U.S. Cl. 106—90 12 Claims

1. A cementitious composition comprising:

(a) at least one hydraulic cement,

(b) water in an amount of not more than 25% by weight of said hydraulic cement,

(c) at least one polymeric water-soluble or water-dispersible additive which is capable of aiding in the processing of the composition in an amount of 1 to 10% by weight of the hydraulic cement in the composition, and

(d) at least one particulate material insoluble in the composition and having an ultimate particle size of less than 0.1 micron, in an amount of 0.5 to 10% by weight of the hydraulic cement in the composition.

4,363,668

METHOD AND APPARATUS FOR BURNING RAW MATERIALS

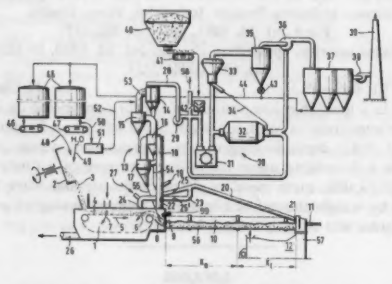
Horst Herchenbach, Troisdorf, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,161

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933289

Int. Cl.³ C04B 7/02; F27B 15/00, 7/02

U.S. Cl. 106—100 10 Claims



1. A method for burning raw materials in the production of clinker from cement raw materials which comprises:

drying and partially deacidifying cement raw materials in lumpy form to produce granules while transporting them in contact with hot gases,

passing another portion of said cement raw materials in the form of finely divided meal into a suspension type heat exchanger to heat the same,

deacidifying the resulting meal more completely in a calciner,

mixing the thus treated granules and deacidified meal, and

treating the resulting mixture in a thermal reactor to complete deacidification and the formation of clinker.

4,363,669

DISPERSIBLE XANTHAN GUM BLENDS

Ian W. Cottrell, Solana Beach; Paul A. Sandford, Del Mar, and John K. Baird, San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 5, 1979, Ser. No. 100,315

Int. Cl.³ C08L 5/00

U.S. Cl. 106—205 12 Claims

1. A dispersible, dry blend of glyoxal-treated xanthan gum and a non-dispersible plant gum selected from the group consisting of guar gum, tara gum, cold-water soluble tamarind gum, and cold-water soluble locust bean gum wherein the xanthan to plant gum weight:weight ratio ranges from about 50:50 to about 25:75.

4,363,670

CONTINUOUS PROCESS FOR INDUSTRIALLY PRODUCING MESOCARBON MICROBEADS

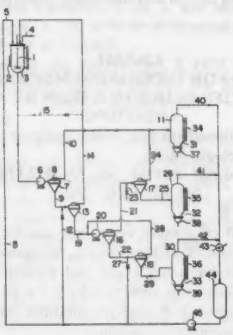
Kosaku Noguchi, Tokyo; Honami Tanaka, Izumi; Yukimasa Kumura, Izumi; Eiji Kitajima, Izumi; Noriyuki Tsuchiya, Izumi, and Tomonori Sunada, Ootsu, all of Japan, assignors to Koa Oil Company, Limited, Japan

Filed Jan. 5, 1981, Ser. No. 222,901

Claims priority, application Japan, Jan. 4, 1980, 55-238

Int. Cl.³ C08L 95/00

U.S. Cl. 106—278 7 Claims



1. A process for continuously producing mesocarbon microbeads which comprises the steps of:

(a) mixing in a dissolving vessel (1) a starting-material pitch comprising a matrix pitch and mesophase microspheres obtained by heat processing a heavy oil and (2) a solvent in which the matrix pitch will dissolve but the mesophase microspheres will not dissolve thereby to obtain a liquid mixture comprising a solution of the matrix pitch dissolved in the solvent and dispersed mesophase microspheres;

(b) supplying the liquid mixture thus obtained in step (a) into at least two sequential stages of liquid cyclones

(i) the first of said two stages separating the mixture into a light liquid portion comprising principally the matrix pitch and the solvent and a heavier liquid portion containing most of the mesophase microspheres, and

(ii) the second of said two stages separating said heavier liquid portion into a medium-weight liquid containing the matrix pitch and the solvent as well as a small portion of fine mesophase microspheres, and a heavy liquid containing the solvent as well as most of the mesophase microspheres;

(c) evaporating the solvent from the light liquid thus obtained in step (b) thereby to separate and collect the matrix pitch;

(d) recycling the medium-weight liquid thus obtained in step (b) to step (a) or step (b); and

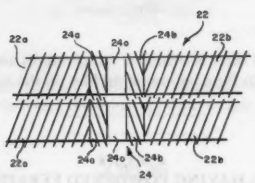
(e) removing the solvent from the heavy liquid thus obtained in step (b) thereby to obtain mesophase microspheres as mesocarbon microbeads.

4,363,671

APPARATUS FOR CHEMICAL CONVERSION OF MATERIALS

Barry A. Rugg, New York, and Robert Stanton, New Hyde Park, both of N.Y., assignors to New York University, New York, N.Y.

Division of Ser. No. 131,339, Mar. 18, 1980, Pat. No. 4,316,748. This application May 18, 1981, Ser. No. 264,244
Int. Cl.³ B01J *3/04, 4/00*
U.S. Cl. 127—1 8 Claims



1. In an apparatus for the dilute sulfuric acid hydrolysis of waste cellulose and being of the type comprising: extruding means including a housing having inlet ports receptive of cellulose to be converted, dilute sulfuric acid and steam or superheated water, an outlet port and a reaction zone therebetween; twin screws mounted in the housing for continuously, conveying the cellulose through the reaction zone and to the outlet port; means defining supply sources of waste cellulose, dilute sulfuric acid and steam or superheated water, said supply means being connected to the respective inlet port; means for continuously feeding the cellulose to the waste celiulose inlet port; means for continuously injecting dilute sulfuric acid into the reaction zone; means for effecting an elevated temperature and pressure with the reaction zone during discharge comprising means for continuously injecting steam or superheated hot water at elevated pressure into the reaction zone and means for maintaining the elevated temperature and pressure including means forming a dynamic seal of the cellulose at the upstream end of the reaction zone and valve means downstream of the outlet port, the improvement wherein the means forming the dynamic seal comprises means forming a radially recessed and unthreaded discontinuity in the twin screws.

4,363,672

SEPARATION PROCESS USING CELLULOSE ACETATE BUTYRATE BOUND ZEOLITE ADSORBENTS

Santi Kulprathipanja, Hoffman Estates, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 139,492, Apr. 11, 1980, Pat. No. 4,295,994, which is a continuation-in-part of Ser. No. 48,955, Jun. 15, 1979, Pat. No. 4,248,737. This application Apr. 9, 1981, Ser. No. 252,663
Int. Cl.³ C13D *3/14;* B01J *20/18*
U.S. Cl. 127—46.3 8 Claims

1. In a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components, by contacting said solution with an adsorbent comprising a crystalline aluminosilicate zeolite exhibiting an adsorptive selectivity towards said component, thereby selectively adsorbing said component from said mixture, separating the solution from contact with said adsorbent and thereafter recovering said adsorbed component by desorption thereof from said adsorbent, the silicon constituent of said adsorbent tending to dissolve in said solution resulting in the undesirable disintegration of said adsorbent, the improvement which comprises impregnation of said adsorbent, prior to said contacting with said aqueous solution, with a water permeable binder material comprising cellulose acetate butyrate to substantially reduce the extent of dissolution of said silicon constituent and the extent of said disintegration of said adsorbent.

4,363,673

PROCESS FOR THE REMOVAL OF CARBON FROM SOLID SURFACES

William J. Settineri; Harold E. Klassen, both of Midland, and Milton C. Tolly, Hope, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1981, Ser. No. 266,557
Int. Cl.³ B08B *7/00*
U.S. Cl. 134—2 10 Claims

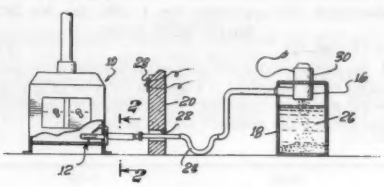
1. A process for removing a carbon layer from a solid surface having such layer thereon which comprises contacting the surface with a gaseous fluid consisting essentially of sulfur trioxide and thereafter, rinsing the surface.

4,363,674

STOVE AND FIREPLACE CLEANING METHOD AND APPARATUS

John T. Fullenwider, Rte. 3, 1211 Esther Wy., Minden, Nev. 89423

Filed Mar. 2, 1981, Ser. No. 239,505
Int. Cl.³ B08B *5/04*
U.S. Cl. 134—21 2 Claims



1. The method of removing and treating material from a combustion chamber which comprises: (1) providing an opening through the wall of a combustion chamber suitable for receiving a vacuum pickup element; (2) providing a movable closure on the inside of the combustion chamber wall within said combustion chamber and over said opening; (3) removably mounting a vacuum pickup element receiving means onto the outside of said combustion chamber wall and in alignment with said opening; (4) providing a vacuum pickup element movably located within said vacuum pickup element receiving means; (5) inserting said vacuum pickup element into said combustion chamber through said opening and past said movable closure; (6) providing a material quench bath means; (7) providing a conduit means between said quench bath means and said vacuum pickup element; (8) drawing by vacuum means the material from said combustion chamber through said vacuum pickup element, through said conduit means and into said quench bath means; and (9) storing said quenched material in a storage means.

4,363,675

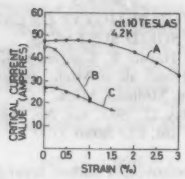
PROCESS FOR PRODUCING COMPOUND BASED SUPERCONDUCTOR WIRE

Kiyoshi Yoshizaki, Sagamihara, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,325
Claims priority, application Japan, May 19, 1980, 55-66166
Int. Cl.³ H01L *39/24*
U.S. Cl. 148—11.5 P 8 Claims

1. A process for producing a Nb_3Sn or V_3Ga compound-based superconductor wire comprising the steps of: forming a

composition by blending at least one metal powder selected from the group consisting of Nb-based and V-based particles at least a part of the surface of which is covered with at least one layer selected from the group consisting of Cu-Sn-based and Ga-based metal layers with at least one metal powder or alloy



powder selected from the group consisting of Cu-based, Sn-based, Ga-based, Cu-Sn-based and Cu-Ga-based; reducing the cross-sectional area of said composition; heat treating said composition; and drawing the heat-treated composition into a wire.

4,363,676

GRANULAR FLUX FOR PIPE WELDING

Dennis D. Crockett, and Robert J. Weaver, both of Mentor, Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 202,291, Oct. 30, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 297,262

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—24 2 Claims

1. An agglomerated flux composition suitable for use in arc welding when deposited as a layer in the form of granular free flowing particles consisting of the following ingredients in approximately the indicated weight percentages:

MgO	5–20
Mn_xO_y	4–16
TiO_2	0–8
Alloys	0–10
Fluorides	1–8
$ZrSiO_4$	0–15
SiO_2	0–15
Al_2O_3	0–20
$Al_2O_3.SiO_2$	20–70
$Na_2O.SiO_2$	3–9

the improvements which comprise the $Al_2O_3.SiO_2$ being in the form of kyanite and the $Na_2O.SiO_2$ binding the other ingredients into agglomerated granular free flowing particles.

4,363,677

METHOD FOR TREATING AN ELECTROMAGNETIC STEEL SHEET AND AN ELECTROMAGNETIC STEEL SHEET HAVING MARKS OF LASER-BEAM IRRADIATION ON ITS SURFACE

Tadashi Ichiyama, Sagamihara; Shigehiro Yamaguchi, Fujisawa; Tohru Iuchi, Kawasaki; Motoharu Nakamura, Himeji, and Yozo Suga, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

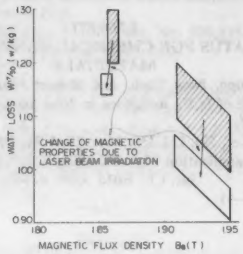
Filed Jan. 22, 1981, Ser. No. 227,379

Claims priority, application Japan, Jan. 25, 1980, 55-6998; Jan. 25, 1980, 55-7000; Jan. 25, 1980, 55-7475

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111 8 Claims

1. A method for treating an electromagnetic steel sheet to reduce its watt loss after completion of its final heat treatment, and comprising irradiating at least one surface of the finally heat-treated sheet with a laser beam having an energy density of from 0.01 to 1000 J/cm² so as to mark the sheet's surface and cause a substantial reduction in the sheet's watt loss, and thereafter a liquid insulating film-forming agent requiring treating at temperatures not higher than 600° C. is coated on the surface



and the coated sheet is treated at temperatures not higher than 600° C. so as to form an insulating film on the surface.

4,363,678

EXPLOSIVES HAVING POWDERED FERRITE MAGNET AS A TRACER DISPERSED THERETHROUGH AND A METHOD FOR PRODUCING THE SAME

Naozumi Nishimura, Sendai; Akira Matsunaga, Yokohama, and Yasuo Ishii, Yotsukaido, all of Japan, assignors to Tohoku Metal Industries, Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,231

Int. Cl.³ C06B *45/32*

U.S. Cl. 149—6 14 Claims

1. In an explosive having a relatively small amount of powdered ferrite magnet dispersed therethrough, the improvement comprising each particle of said powdered ferrite magnet coated with a resin coating which is stable for the explosive materials on the entire outer surface of each particle.

4,363,679

USE OF ZINC PEROXIDE AS OXIDANT FOR EXPLOSIVES AND PYROTECHNICAL MIXTURES

Rainer Hagel, Lichtenfels, and Klaus Redecker, Nuremberg, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,220

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952069

Int. Cl.³ C06B *33/00*

U.S. Cl. 149—37 15 Claims

1. A process for promoting the oxidation of an explosive-containing mixture or a pyrotechnical mixture which comprises utilizing zinc peroxide as the sole or predominant oxidant in said mixture.

4,363,680

PROCESS FOR CONTACTING A POWDER WITH A FIBROUS WEB

George S. Buck, Jr., and Roger V. Russell, both of Memphis, Tenn., assignors to Fiberlok Inc., Memphis, Tenn.

Continuation of Ser. No. 74,677, Sep. 12, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,344

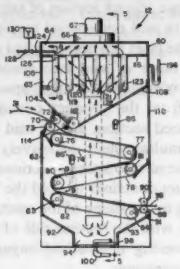
Int. Cl.³ B05D *1/12*

U.S. Cl. 156—62.6 16 Claims

1. A process for intimately contacting a moving fibrous web with a powder comprising the steps of:

I. passing a mixture of powder and air through the moving fibrous web;

II. reversing the direction of movement of the fibrous web; and then



III. passing a mixture of powder and air through the moving fibrous web in a direction opposite to that of Step I.

4,363,681

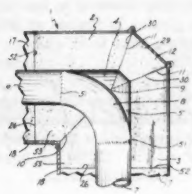
METHOD FOR MAKING PIPE INSULATOR

Robert O. Williams, 2264 Weber Rd., Gladwin, Mich. 48624

Division of Ser. No. 148,223, May 9, 1980, Pat. No. 4,327,778. This application Oct. 23, 1981, Ser. No. 314,390

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—64 **3 Claims**



1. A method of fabricating insulators for pipe elbows, and the like, comprising:

providing semi-cylindrically shaped insulative material having a longitudinally oriented interior channel shaped to respectively receive therein pipe sections interconnected by an elbow;

cutting first and second lengths of said insulative material in accordance with the length of the elbow for assembly into a first split sleeve leg;

cutting third and fourth lengths of said insulative material in accordance with the length of the elbow, for assembly into a second split sleeve leg;

measuring the angle included between the pipe sections;

cutting a dihedral face in each split sleeve leg for orientation toward each other at a medial portion of said elbow, including forming inner and outer surfaces which intersect at the central axis of the associated leg, wherein each inner surface is inclined from a plane perpendicular with the central axis of the associated leg at an angle substantially equal to one-half (½) of the included angle, and each outer surface is inclined from the plane of the associated inner surface at an angle substantially equal to one-quarter (¼) of the included angle;

cutting first and second wedge-shaped insulator gores from a fifth length of said material, wherein the converging sides of each gore are inclined toward each other at an angle substantially equal to one-half (½) of the included angle, and abuttingly mate with the outer leg surfaces to form a closed, insulative sleeve about the elbow.

4,363,682

PROCESS FOR THE SUPERFICIAL TREATMENT OF A FIBROUS FILTERING LAYER, WHICH IS NON-WOVEN AND HIGHLY AERATED, FORMING ELECTRET

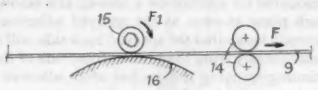
Bernard Thiebault, Montmorency, France, assignor to Seplast, Gennevilliers, France

Filed Apr. 6, 1981, Ser. No. 251,077

Claims priority, application France, Apr. 18, 1980, 80 08810

Int. Cl.³ B29H *9/04*; D04H *3/08*

U.S. Cl. 156—181 **6 Claims**



1. A process for superficially treating a highly aerated, fluffy, fibrous electret, air filtering fabric layer having fibers projecting above a subjacent mass, which comprises smoothing at least one fluffy surface of the layer by exerting a light friction under low pressure to flatten the projected fibers on the subjacent fiber mass without substantial compression of said mass, and at a softening temperature to weld the superficial fibers together and to form a skin or pourous glaze which will be unclogged and by a surface effect adds to the filtering power of the electrostatic filtering layer without reducing the gaseous flow passing through the layer.

4,363,683

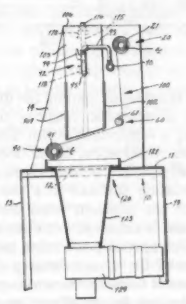
PROCESS FOR AFFIXING MARKER TO FABRIC

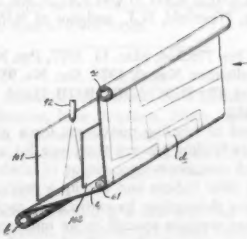
Nelson P. Diesel, 816 Dutch Mill, Ballwin, Mo. 63011

Continuation-in-part of Ser. No. 51,836, Jun. 6, 1979, abandoned. This application Aug. 21, 1980, Ser. No. 180,113

Int. Cl.³ B65H *81/00*; A41D *1/00*; A23L *1/16*; B05D *1/02*

U.S. Cl. 156—184 **2 Claims**





1. A method of preparing a pre-printed, pre-rolled garment-making marker having a blank end for adherence to the upper

side of an elongated bundle of fabric preliminary to cutting, comprising the steps of

mounting the pre-rolled marker for rotation on a feed axis,

unrolling the marker from the feed axis and drawing it in a plane past transversly-aligned adhesive-spraying nozzles directed at the unprinted back upward facing side of the marker,

spraying adhesive onto the back side of the marker as it is drawn past the nozzles, commencing partial drying of the sprayed adhesive then,

re-rolling the marker adhesive side outward upon a take-up roll mounted for rotation on a take-up axis below the level of such plane as soon as the sprayed adhesive becomes sufficiently tacky that the sprayed back side will thereafter separate cleanly from the printed front side of the marker,

discontinuing spraying the marker after adhesive has been applied to its back side along the entire printed pattern portion and only said blank end remains,

continuing to draw the marker to and upon the take-up roll until the blank end of the marker overlays the outer layer of the sprayed portion of the back side of the marker, and

removing the marker so re-rolled from said take-up axis.

4,363,684

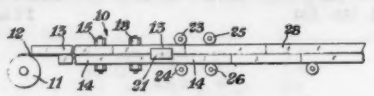
METHOD FOR THE LAMINATION OF FOAM INCLUDING A REINFORCING SCRIM

Robert A. Hay, II, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 137,665, Apr. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 41,355, May 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 925,081, Jul. 17, 1978, abandoned. This application Jun. 9, 1981, Ser. No. 271,161

Int. Cl.³ B31F *1/00*

U.S. Cl. 156—201 **10 Claims**



1. In a generally continuous method for the preparation of an elongate laminate of synthetic resinous thermoplastic foam body incorporating a reinforcing scrim therein wherein adjacent foam surfaces of adjacent foam bodies are heated by means of a generally planar heating element having first and second opposed heating surfaces to a temperature sufficient that on contact of the adjacent foam surfaces and cooling thereof, a rigid bond is achieved between the bodies, the improvement which comprises positioning the scrim relative to the major surfaces of the planar heating element during the heating of the adjacent foam surfaces to thereby obtain a laminate exhibiting a desired degree of curvature.

4,363,685

PACKAGE LABEL AND MANUFACTURE OF SAME

Rollin T. White, Westfield, N.J., assignor to NJM, Inc., Fairfield, N.J.

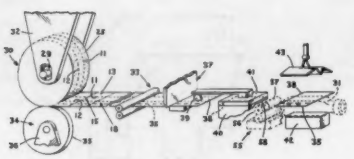
Division of Ser. No. 776,534, Mar. 11, 1977, Pat. No. 4,128,954. This application Nov. 3, 1978, Ser. No. 957,490

Int. Cl.³ B29C *17/04;* B32B *31/04*

U.S. Cl. 156—212 **4 Claims**

1. The method of labeling containers for a given product which comprises feeding toward the place for application of the labels to such containers a succession of labels each having on its face side label indicia and having a reverse side adhesively inoperative throughout its entire area, each label being composed of two sections spaced by an intermediate section provided with pressure sensitive adhesive masked by release treated material to prevent adhesion thereof to an article, one of said two spaced sections being manually separable from said intermediate section without damage to either, during such feeding operation substantially simultaneously rendering adherent with a single type of adhesive the reverse side of each of said two spaced sections, such rendering action rendering the reverse side of said one spaced section of such adhesiveness as to permanently secure said one spaced section to the product container to which the label has been applied and rendering the reverse side of the other of said two spaced sections sufficiently adhesive as to enable said other spaced section to be manually removed from the product container without disturbing said one spaced section, and at said place of application, substantially simultaneously adhesively affixing both of said adhesively rendered two spaced sections to outer surface portions of the product container to hold the label, as a whole, in a form conforming to the shape of the container surface area covered by the label, with the reverse side of said intermediate section in direct covering unattached engagement with the outer surface of the container.

3. In a label machine, a station at which labels are applied to products, means for feeding through the machine to said label applying station a succession of labels each having on its face side label indicia and having a reverse side adhesively inoperative throughout its entire area, each label being composed of two sections spaced by an intermediate section provided with pressure sensitive adhesive masked by release treated material to prevent adhesion thereof to an article, one of said two spaced sections being manually separable from said intermediate section without damage to either, means operable to substantially render adherent with a single type of adhesive the reverse side of each of said two spaced sections, said operable



means rendering the reverse side of said one spaced section sufficiently adhesive to permanently secure said one spaced section to a product to which the label has been applied, and rendering the other of said two spaced sections of such adhesiveness as to enable said other spaced section to be manually removed from the product without disturbing said one spaced section, and means for substantially simultaneously affixing both of said adhesively rendered two spaced sections to separate surface portions of a product to hold the label, as a whole, in a form conforming to the shape of the product surface area covered by the label, with the reverse side of said intermediate section in direct covering unattached engagement with the outer surface of the product, said labels being fed through the machine as a continuous length of label web, first means for supporting a roll of said label web on the machine, second means associated with said first roll supporting means for supporting a roll of a continuous length of narrow tape constituted of pressure sensitive adhesive provided on one side of a separable backing of release treated material, said first and second means coacting to enable the pressure sensitive adhesive on said tape to progressively adhere to the reverse side of said label web as the web is fed from its roll, said second roll supporting means being so located relative to said first roll supporting means that the tape is adhered to the web intermediate and spaced from the longitudinal side edges of the web, and said feeding means engaging the composite web and tape to draw said label web and tape from the rolls thereof, and means for successively severing from the composite web and tape labels each constituted of a short section of said tape.

4,363,686

PROCESS FOR THE PRODUCTION OF IMITATION SUEDES BY THE REVERSAL PROCESS

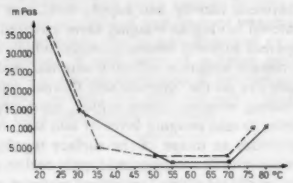
Ernst Komarek, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 229,813

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004327

Int. Cl.[3] B29C *13/00*

U.S. Cl. 156—242 8 Claims



1. A process for the production of sheet products having a suede-like surface by applying a coating paste to a matrix whose surface has the form of a negative of suede or suede-like materials, solidifying the coating by heating, and removing the solidified coating from the matrix, comprising:

(a) applying a coating paste of a two-component system which may be hardened to a polyurethane urea only when heated and which is based on

(1) a blocked isocyanate prepolymer and a polyamine or

(2) an isocyanate prepolymer and a complex of an alkali metal halide and an aromatic polyamine and

up to about 40% by weight of solvent so that the coating paste has a viscosity of at most about 100,000 mPa.s at room temperature;

(b) heating the coating to a temperature of from 30° to 80° C., the viscosity of the coating paste passing through a minimum which is at the most 30,000 mPa.s; and

(c) hardening the coating to the polyurethane by heating to a temperature above 90° C.

4,363,687

METHOD FOR MAKING LARGE FIBERGLASS STRUCTURES

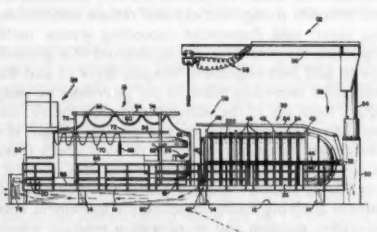
Stephen W. Anderson, 1441 S. Monaco Street Pkwy., Denver, Colo. 80224

Division of Ser. No. 866,013, Dec. 30, 1977, Pat. No. 4,278,411.

This application Apr. 10, 1981, Ser. No. 252,996

Int. Cl.[3] B29C *5/02, 5/04, 27/26;* B29D *3/02*

U.S. Cl. 156—245 14 Claims



1. In a method of making a large fiberglass structure, the steps comprising:

passing an operator's carriage into and out of a mold having an open end and a closed end;

applying raw materials comprising resin and glass fibers to the inside surface of said mold during certain of the passages of said carriage therethrough; and

manually controlling certain operations of said carriage from inside said carriage.

4,363,688

PROCESS AND APPARATUS FOR PRODUCING FILLING MATERIAL

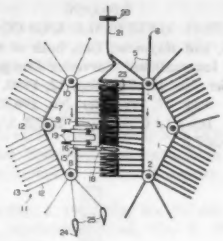
Kazo Yasue, Utsunomiya, Japan, assignor to Anmin Manufacturing Co., Ltd., Japan

Filed May 22, 1981, Ser. No. 266,328

Claims priority, application Japan, May 26, 1980, 55-69848

Int. Cl.[3] D02G *3/00*

U.S. Cl. 156—251 5 Claims



1. A process for producing filling material, which comprises steps of inserting a filament bundle formed of a plurality of arranged filament among a plurality of filament bending members disposed contiguously to one another by filament inserting members in the state where the filament bundle is kept in contact with the end portions of the filament bending members, to bend the filament bundle zigzag, heating and melt-cutting the filament bundle at the parts kept in contact with the end portions of the filament bending members to form two fold filament bundles having a short fiber length and simultaneously fusion-bonding the end portions of the filament bundles near said melt-cut parts, whereby is obtained filling material comprising a plurality of filament having a short fiber length and being bent in the form of a loop, ends of said filaments converging to one point and the converging filaments being integrally fusion-bonded to one another at said convergent point.

2. An apparatus for producing filling material, which comprises two endless members supported by pulleys respectively, a plurality of filament bending members disposed contiguously to one another on the first endless member, a plurality of filament inserting members disposed contiguously to one another on the second endless member, said filament bending members and said filament inserting members being arranged so that they can be advanced between the point where the top ends of the filament bending members confront the top ends of the filament inserting members and the point where the top ends of the filament bending members alternate with the top ends of the filament inserting members, and a heater of a melt-cutting and fusion-bonding member which is disposed at the point where the top ends of the filament bending members alternate with the top ends of the filament inserting members, in the state where the heater is kept in contact with the top ends of the filament bending members, whereby the filament bundles are melt cut at the top of the filament bending members and said melt cut ends fuse to form loops.

4,363,689

ADHESIVE BONDING PROCESS

Richard R. Roesler, New Brighton, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Dec. 20, 1978, Ser. No. 971,611

Int. Cl.[3] C09J *5/02*

U.S. Cl. 156—307.3 18 Claims

1. A process for bonding a film selected from the group consisting of nylon, polyester, polyvinyl chloride, polyethylene, and acrylonitrile-butadiene-styrene copolymers to a substrate comprising contacting the substrate with an liquid adhesive of the formula:

(a) from about 40% to about 90% by weight of a saturated polyol; and,

(b) from about 10% to about 60% by weight of a reactive material having a radiation sensitive pi bond and having a boiling point greater than that of benzene, and mixtures thereof; and,

positioning the film and the substrate such that the adhesive is between the substrate and film and thereafter polymerizing the reactive material to effect bonding.

4,363,690

STRUCTURAL MATERIALS AND COMPONENTS

John Gagliani, and Raymond Lee, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 186,563, Sep. 12, 1980. This application Aug. 27, 1981, Ser. No. 296,833

Int. Cl.[3] **C09J** *5/02;* **B32B** *5/18*

U.S. Cl. 156—307.5 **20 Claims**

1. A process of making a structural component which includes the steps of assembling in a juxtaposed relationship a core material and a formulation that is convertible into a blocking material, said core material and said formulation each containing a polyimide precursor prepared by dissolving one or more primary diamines and 3,3',4,4'-benzophenonetetracarboxylic acid or an anhydride of that acid in essentially stoichiometric amounts in a lower alkyl alcohol, said formulation also including at least one filler, and the assembly being heated until said precursors are converted to polyimides and said blocking material is integrated with said core material.

4,363,691

HEAT-SINK IMAGING APPARATUS FOR LIVE SKIN TISSUE USING PULSED ENERGY SOURCE

Vincent D. Cannella, Detroit, and Mark H. McCormick-Goodhart, Grosse Pointe Woods, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

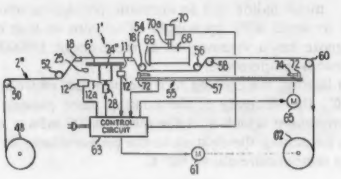
Division of Ser. No. 11,155, Feb. 12, 1979, Pat. No. 4,251,564. This application Nov. 21, 1980, Ser. No. 208,885

Int. Cl.[3] **B41K** *1/00;* **B32B** *31/00;* **G03C** *5/16*

U.S. Cl. 156—350 **22 Claims**

11. Apparatus for recording the surface topology of live skin tissue, said apparatus comprising: a recording station and a recording strip-severing station; a strip of imageable recording material extending by said fingerprint recording and strip-severing stations, said strip of recording material having an imaging layer on one side thereof; said recording station including imaging means responsive to application of a given live skin tissue pressure to said strip of recording material by providing an image of the surface topology of the skin tissue applied thereto; means for automatically advancing the imaged portion of said strip of recording material to said strip-severing station when pressure on said strip of recording material is relieved; said strip-severing station including strip-severing means mounted for movement between an inoperative position and an operative position where the imaged portion of said strip of material is severed from the rest of the same; and means for operating said strip-severing means.

13. Apparatus for recording the surface topology of live skin tissue, said apparatus comprising: a recording station and a recording strip-severing station; a strip of imageable recording material extending by said recording and strip-severing stations and between take-up and supply reels, said strip of recording material having an imaging layer covered by an optically transparent exposed release material which will not adhere to a pressure sensitive adhesive material, and a pressure sensitive adhesive on the opposite side thereof; said recording station including imaging means which, upon application of live skin tissue to said imaging layer of said strip of recording material, provides an image of the surface topology thereof; means for momentarily rotating said supply reel to advance the imaged portion of said strip of recording material to said strip-severing station after a live skin tissue image is formed; said recording strip-severing station including a strip-severing means mounted for movement between an inoperative position and an operative position where the imaged portion of said strip of imageable recording material is severed from the rest of the same, the strip of imageable recording material from which the imaged portion thereof has been severed maintaining its integity to form a web of such material which is would upon said take-up reel; and means for operating said strip-severing means.



17. Apparatus for recording a fingerprint and applying the same to a check or the like, said apparatus comprising: a fingerprint recording station and a check-receiving station; a strip of heat-imageable recording material initially wound on a supply reel and extending therefrom passed said fingerprint recording and check-receiving stations and then extending upon a take-up reel, said recording material having a substrate upon which is coated a heat-responsive imaging layer, an exposed layer of pressure sensitive adhesive material on said substrate, and an exposed optically transparent exposed release material on said imaging layer; said fingerprint recording station including imaging means responsive to the application of a given finger pressure to said heat-responsive imaging layer of said strip of heat imageable recording material for providing an image of the surface topology of the skin tissue applied thereto and for automatically advancing the imaged portion of said strip of heat imageable recording material to said check-receiving station when pressure on said strip of material is relieved; said check-receiving station including a strip-severing and recording material applying means mounted for movement between an inoperative position and an operative position where the fingerprint imaged portion of said strip of material is severed from the rest of the same and applied to a check at said check-receiving station, the strip of heat imageable recording material from which the fingerprint portion thereof has been severed maintaining its integity to form a web of such material which is wound upon said take-up reel; and means for operating said strip-severing and recording material applying means.

18. The apparatus of claims **11**, **13** or **17** wherein said imaging layer is made of a heat-imageable material which, upon

conduction of a given amount of heat energy to any given portion thereof, will be heated to a given imaging temperature in the absence of any substantial heat-sinking applied thereto; and said imaging means including: an energy transmitting and contact member confronting the inner side of said strip of recording material and spring mounted for a given predetermined inward movement when a given inward pressure is applied thereto, energy applying means for generating energy to be applied to said heat transmitting and contact member which energy is transmitted therefrom to said strip of recording material to provide said given amount of heat energy to each of the various portions of said layer of imaging material, to provide selective imaging of unheat-sinked or minimally heat-sinked portions of said layer of imaging material, and means responsive to a given movement of said energy transmitting and contact member for applying said energy to said member only for a predetermined period.

4,363,692

SHEET BINDING APPARATUS

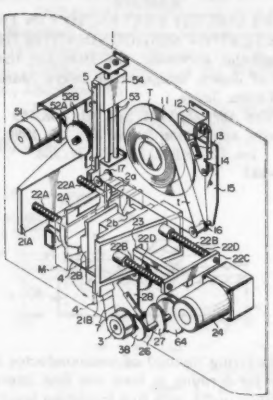
Yoshiyuki Imamura, and Moriatsu Kawakami, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,720

Claims priority, application Japan, Apr. 30, 1980, 55-57575; Apr. 30, 1980, 55-57576

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—351 **15 Claims**



1. An apparatus for binding sheets by a tape which comprises:

a supporting plate for supporting thereon sheets to be bound;

a pair of confronting holding plates disposed above the supporting plate and horizontally movable between one position where the sheets are set between said holding plates and another position where the sheets are bound, each holding plate being formed on the inner surface thereof with a notch groove;

means for supplying the tape to said holding plates;

means for horizontally moving the holding plates to clamp the sheets therebetween while the tape is received in one notch groove of one holding plate between said one holding plate and the sheets to cover the sheets at top and bottom edges thereof with the tape;

a tape push-down member disposed above the pair of holding plates and movable vertically to push the tape into the groove of the other holding plate between said other holding plate and the sheets whereby the sheets are wrapped with the tape, the tape push-down member being formed at its lower end with a forked portion in which a recess is formed;

a heating member for bonding the ends of the wrapped tape and cutting the tape to separate the end of the wrapped tape from the supplied end of the tape, the heating member being disposed below the recess of the tape push-down member and having a convex surface for engaging with the tape to bond and cut the tape; and

means for limiting the movement of said tape push-down member when said tape push-down member is engaged with the tape under tension and is imparted a great amount of reaction by the tape, said limting means comprising a friction plate and a pair of gears for frictionally engaging the friction plate therebetween, one of the gears being driven by a driving source and the other of the gears driving the tape push-down member.

4,363,693

FULL-AUTO LABELING SYSTEM

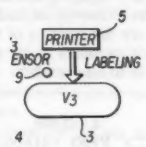
Kunihiko Fujii, and Yoshihisa Nishiyama, both of Shizuoka, Japan, assignors to Tokyo Electric Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,614

Claims priority, application Japan, May 8, 1979, 54-56178; May 21, 1979, 54-62505

Int. Cl.³ G05G *15/00*

U.S. Cl. 156—360 **6 Claims**



1. In a full-auto labeling system having a sending-in conveyor; a weighing conveyor to which a load cell is joined; a sticking conveyor which is disposed along a label printer equipped with a sticking mechanism are disposed in alignment, whereby the three conveyors have their operations controlled independently of one another; and sensors for detecting a commodity on said conveyors are disposed for each respective conveyor, whereby operations of said load cell and the respective conveyors are controlled by combinations of outputs of said sensors and short-time timers, the improvement comprising load cell starting means which starts said load cell operation every predetermined time period during a time interval when there is no output from said sensor of said weighing conveyor characterized in that even when no output of the sensor exists, said load cell is started every predetermined period.

4,363,694

BONDED FABRIC MACHINE

Robert C. Fay, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

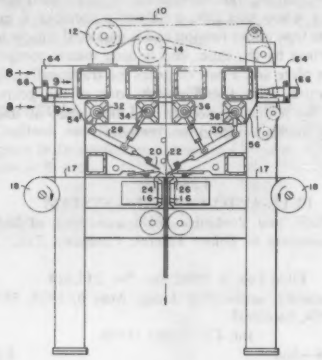
Continuation of Ser. No. 186,895, Sep. 15, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,515

Int. Cl.³ D04H *11/00*

U.S. Cl. 156—435 **3 Claims**

1. Apparatus to produce a bonded fabric comprising: a frame, means to supply two adhesive coated backing sheets operably associated with said frame, means to guide the backing material into opposed relationship, said means to guide including a pair of opposed, adjustable spaced guide members, a pair of folding blades, means to supply a plurality of yarns between said folding blades, means operably associated with said folding blades to alternately cause said folding blades to place yarn into the adhesive on one of said backing sheets between said spaced guide members and then into the other backing sheet, each of said folding blades being operably connected to a support member separated from said spaced guide

members and from the support member of the other of said folding blades, support means slidably supporting each of said support members to said frame, each side of said frame having a flange, said support means including a block member slidably supported on each of said flanges, and adjustment means supported in said frame and engaging said block members to cause said support members to be slid on said flanges through said block members to vary the position of said support members relative to said guide members to vary the position of said folding blades relative to one another.



4,363,695

AUTOMATIC REEL CHANGE SYSTEM

Josef Marass, Seehausen, Fed. Rep. of Germany, assignor to Georg Spiess GmbH, Gersthofen, Fed. Rep. of Germany

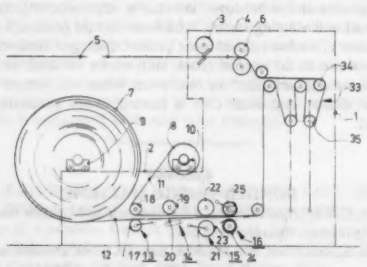
PCT No. PCT/DE80/00016, § 371 Date Oct. 21, 1980, § 102(e) Date Sep. 25, 1980, PCT Pub. No. WO80/01794, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 20, 1980, Ser. No. 209,071

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906598

Int. Cl.³ B31F *5/06*; B65H *19/18*

U.S. Cl. 156—504 **8 Claims**



1. In an automatic reel change system, for use on processing a paper web taken from a reel and feeding it to a transverse cutter, of the type having a reel support for at least two reels from which, on reel changing, a two-ply double web may be taken composed of a new web and an old web, a cutting station disposed adjacent to the path of the double web for performing a cutting operation on said double web, said cutting station having means for cutting said double web along a cut line, thereby cutting said old web so as to produce a waste run disposed rearwardly of the cut line, relative to the direction of web travel, and separated therefrom and disposed forwardly of said cut line, a new trailing end of said old web, and thereby cutting said new web so as to produce a waste run disposed forwardly of the cut line, relative to the direction of web travel, and separated therefrom and disposed rearwardly of said cut line, a new leading end of the new web, a joining station disposed after said cutting station in the direction of the web travel for performing a joining operation which is timed for operation after said cutting operation, said joining station having means for joining said trailing end of the old web with said leading end of said new web by means of an adhesive strip overlapping and forming a joint between said new ends, and an advancing unit through which said double web runs which is disposed before said cutting station, relative to the direction of web travel, for performing an advancing operation on said double web, which is timed for operation at least between said cutting and joining operations, the improvement comprising:

two winding-up rolls, one for accomodating a plurality of turns of said waste run of said new web, and the other one for accomodating a plurality of turns of said waste run of said old web, said winding-up rolls being disposed after said joining station and being independently timed for operation, at least said winding-up roll for said waste run of said old web being a suction roll which is pivotably supported for movement between an inoperative and an operative position, in the latter of which it is positioned to wind up said waste run of said old web, and wherein said winding-up roll for winding up said waste run of said new web is a driven roll operable at a speed slightly greater than the normal web speed.

4,363,696

SHORT CIRCUIT PREVENTION IN THE MANUFACTURE OF SEMICONDUCTOR DEVICES

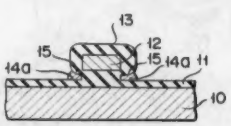
Yoshihide Nagakubo, Kawasaki, and Hisakazu Iizuka, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 28, 1981, Ser. No. 258,415

Claims priority, application Japan, Jun. 25, 1980, 55/85068

Int. Cl.³ H01L *21/283, 21/308*

U.S. Cl. 156—653 **13 Claims**



1. A manufacturing method of semiconductor devices including a step for forming at least one first interconnection layer with a given width on a first insulating layer and a step for forming at least two second interconnection layers which cross said first interconnection layer on a second insulating layer, said manufacturing method comprising:

a first step for forming an underlying interconnection layer including said first interconnection layer on said first insulating layer, said underlying interconnection layer having projected portions at both sides of said interconnection layer of said given width, at least a part of each projected portion being removed subsequently;

a second step for selectively etching said first insulating layer with said underlying interconnection layer as a mask;

a third step for forming said second insulating layer;

a fourth step for forming a conductive layer on the entire surface, including said underlying interconnection layer, for forming said second interconnection layers;

a fifth step for covering said second interconnection layers with a first etching resist layer;

a sixth step for removing said conductive layer covering said entire surface, except in that region corresponding to said second interconnection layers, by an anisotropic etching method with said first etching resist layer as a mask;

a seventh step for removing said second insulating layer with

said second interconnection layers as a mask, a part of said conductive layer remaining under the side edges of said projected portions, causing short-circuiting between said second interconnection layers through said conductive layer;

an eighth step for forming a second etching resist layer on said underlying interconnection layer, said second etching resist layer being provided between said second interconnection layers and at such a position as to cause said remaining conductive layer in said seventh step to be removed by an anisotropic etching method with said second etching resist layer as a mask, thereby preventing the short-circuiting between said second interconnection layers;

a ninth step for removing a part of said underlying interconnection layer by said anisotropic etching method with said etching resist layer as a mask, to finally form said first interconnection layer having substantially said given width; and

a tenth step for removing said second etching resist layer formed in said eighth step.

4,363,697

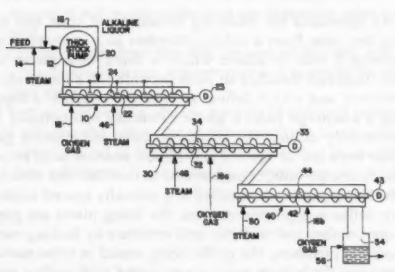
METHOD FOR MEDIUM CONSISTENCY OXYGEN DELIGNIFICATION OF PULP

Larry D. Markham, Pierrefonds, Canada, and Henrik J. Eklund, Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio and Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 3, 1979, Ser. No. 99,684

Int. Cl.³ D21C 9/10

U.S. Cl. 162—19 **13 Claims**



1. A process for the continuous oxygen delignification of medium consistency pulp comprising the steps of:

a. introducing pulp at a consistency of from 8 to 20% and alkaline materials into a first reaction zone and maintaining the consistency of the pulp at between 8% to 20% throughout the first and subsequent reaction zones,

b. introducing gaseous oxygen into said first reaction zone to delignify said pulp and maintaining the oxygen partial pressure in the first and subsequent reaction zones from about 30 to 200 psig,

c. agitating the mixture of the pulp gaseous, oxygen, and alkaline materials with a screw conveyor extending along the length of said first zone operated at from 10 to 200 rpm, and

d. passing said mixture into one or more subsequent substantially horizontal reaction zones and retaining the pulp in said one or more zones for a time sufficient for further delignification to occur while agitating said pulp with a screw operating at from 0.5 to 5 rpm.

4,363,698

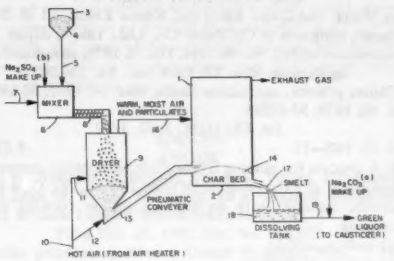
METHOD FOR DRYING AND BURNING VISCOUS AQUEOUS LIQUORS WHICH CONTAIN ORGANICS

Hugh W. Nelson, West Hartford; George J. Prohazka, Simsbury, both of Conn., and Keith W. Morris, Ashton, Canada, assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 163,836, Jun. 27, 1980. This application Oct. 30, 1981, Ser. No. 316,587

Int. Cl.³ D21C 11/12

U.S. Cl. 162—30.1 **5 Claims**



1. A method for recovering smelt from black liquor, including,

mixing hot heavy black liquor with material comprising sawdust or pith which is solid and porous and finely divided and combustible to coat the material with the solids of the liquor, then

passing heated air over the mixture to remove the water of the liquor, then

heating the material coated with the solids of the liquor in a boiler to pyrolyze and burn the organic portion of the solids and smelt the inorganic portion of the solids,

heating water with the combustion to convert the water into clean steam,

and passing the molten smelt into water to form green liquor.

4,363,699

PROCESS FOR STABILIZING SOLUTIONS OF PEROXIDIC COMPOUNDS USED FOR BLEACHING

Jean DeCeuster, Vilvoorde; Paul Essemaeker; Edmond Bouillet, both of Brussels; Alain Decamps, Rhode-Saint-Genese, and Pierre Ledoux, Brussels, all of Belgium, assignors to Solvay & Cie., Brussels, Belgium

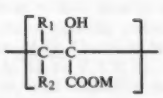
Continuation-in-part of Ser. No. 769,666, Feb. 17, 1977, abandoned. This application Sep. 4, 1980, Ser. No. 184,053

Claims priority, application Luxembourg, Feb. 25, 1976, 74434

Int. Cl.³ D21C 9/16

U.S. Cl. 162—71 **12 Claims**

1. Process for bleaching paper pulp or cellulosic fibers by contacting the paper pulp or cellulosic fibers with a stabilized solution containing water, a peroxidic compound used for bleaching and a stabilizer, which stabilizer is at least one polymer derived from an alpha-hydroxyacrylic acid, which polymer is a homopolymer and contains units of the formula:



where R_1 and R_2 represent hydrogen or an alkyl group comprising from 1 to 3 carbon atoms which can be substituted by a hydroxyl group or a halogen atom, R_1 and R_2 being identical or different, and where M represents a sodium or potassium atom or an ammonium group, said peroxide compound being

present in an amount between 0.01 and 30% by weight relative to the weight of solvent, said polymer having an average molecular weight of between 2,000 and 800,000 and being present in an amount between 0.01 and 30% by weight relative to the weight of water.

4,363,700

PROCESS FOR PULPING LIGNOCELLULOSIC MATERIAL WITH AN ALKALINE SULFIDE COOKING LIQUOR CONTAINING AN ACCELERATING ADDITIVE AND REDUCING ASSISTANT

Isao Wada; Jun-ichiro Kido, and Kazuo Koido, all of Tokyo, Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 967,694, Dec. 8, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 130,007

Claims priority, application Japan, Dec. 14, 1977, 52-149195; Feb. 10, 1978, 53-13566

Int. Cl.³ D21C *3/02, 3/20*

U.S. Cl. 162—72 **5 Claims**

1. A process for pulping lignocellulosic material comprising delignifying, at a temperature of from 140° to 190° C., a lignocellulosic material with an alkaline sulfide cooking liquor containing:

(a) sodium sulfide;

(b) sodium hydroxide;

(c) a delignification-accelerating additive which consists of at least one cyclic organic compound selected from the group consisting of quinone compounds, hydroquinone compounds, 9,10-diketohydroanthracene compounds and 9,10-dihydroxyhydroanthracene compounds, and which is in an amount of from 0.01 to 5% based on the bone dry weight of said lignocellulosic material; and

(d) a reducing assistant which consists of at least one compound selected from the group consisting of sodium sulfite and potassium sulfite, and which is in an amount of from 0.49 to 5.0% in terms of Na_2O, based on the bone dry weight of said lignocellulosic material, and separating the resultant delignified material from the delignifying mixture;

the sodium sulfide and the sodium hydroxide being present in said alkaline sulfide cooking liquor in amounts to provide therein (i) an effective alkali content of from 8 to 40%; and (ii) a sulfidity of from 3 to 50%, both based on the bone dry weight of said lignocellulosic material.

4,363,701

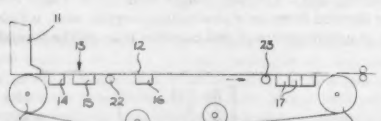
SUPPORTING MEMBER FOR PAPER-MAKING SCREEN IN PAPER MACHINES

Yasunobu Kawae, and Michio Kukimura, both of Kokubu, Japan, assignors to Kyoto Ceramic Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 228,808, Jan. 28, 1981, abandoned, which is a continuation of Ser. No. 102,127, Dec. 10, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,732

Int. Cl.³ D21F *1/00*

U.S. Cl. 162—301 **10 Claims**



1. In a paper making machine having a continuous moving screen, the improvement comprising one or more supporting members for partially supporting said screen, each said supporting member comprising a sintered body consisting essentially of silicon nitride having a porosity of approximately 0.8 percent or less.

5. A machine according to claim 1 wherein said paper making machine is a twin wire type and further wherein said supporting members are disposed alternatively on each side of a pair of parallel papermaking screens.

4,363,702

APPARATUS FOR RECEIVING INCANDESCENT COKE

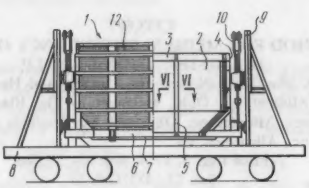
Valery N. Kucher, ulitsa 9 Maya, 15 kv. 25; Georgy R. Reiman, ulitsa Syrovtsa, 2/28 kv. 79; Grigory D. Zhovtobrjukh, Komsomolsky prospekt 20, kv. 40, all of Dneprodzerzhinsk; Evgeny P. Likhogub, ulitsa Slinko, 2a, kv. 11; Gersh A. Dorfman, ulitsa 23 Avgusta, 31a, kv. 52, both of Kharkov; Mikhail I. Durachenko, ulitsa Lesopilnaya, 1/28, kv. 32, Dneprodzerzhinsk; Alexandr N. Minasov, ulitsa Ivanova, 12/16 kv. 59, Kharkov; Valentin B. Bocharov, ulitsa Boiko 41 kv. 72, and Alexandr Z. Popenko, ulitsa Prigorodnaya 68, both of Dneprodzerzhinsk, all of U.S.S.R.

PCT No. PCT/SU79/00062, § 371 Date Mar. 31, 1981, § 102(e) Date Mar. 26, 1981, PCT Pub. No. WO81/00414, PCT Pub. Date Feb. 19, 1981

PCT Filed Jul. 31, 1979, Ser. No. 247,299

Int. Cl.³ B61D *7/12, 7/18, 7/22*; C10B *39/14*

U.S. Cl. 202—262 **7 Claims**



1. An apparatus for receiving incandescent coke and conveying the same from a coking chamber to a quenching site, comprising a wall structure which is lined with plates of a suitable material, installed so as to provide for a linear expansion thereof, and which defines at its bottom portion a hopper having a discharge hole, a girdle extending substantially circumferentially around the discharge hole, and bottom gates movable between an opened and closed position with respect to said discharge hole, characterized in that the wall structure and the lining plates are installed in a mutually spaced relationship to define a gap therebetween, the lining plates are joined with one another and with the wall structure by locking means and spacing members, the girdle being round in cross-section, and wherein the bottom gates are provided with sealing members which are fixed thereto for movement therewith, said sealing members having at least one sealing surface disposed so that, with the bottom gates in the closed position covering said discharge hole, said at least one sealing surface contacts said girdle extending tangentially with respect thereto.

4,363,703

THERMAL GRADIENT HUMIDIFICATION-DEHUMIDIFICATION DESALINATION SYSTEM

Ahmed A. ElDifrawi, Burr Ridge; Christopher F. Blazek, Palos Hills, and Bernard D. Yudow, Chicago, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 6, 1980, Ser. No. 204,560

Int. Cl.³ C02F *1/14*

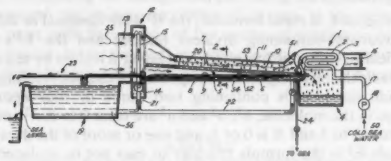
U.S. Cl. 203—10 **30 Claims**

1. A process for the evaporative desalination of salt water to provide fresh water which process fully utilizes the latent heat of condensation to provide additional fresh water, comprising, during periods of isolation:

(a) passing comparatively cold salt water into indirect heat exchange contact with a flow of moisture laden comparatively warm air so that fresh water is condensed from the moisture laden comparatively warm air and the heat of condensation of that fresh water is transferred to the comparatively cold salt water, the temperature of which becomes comparatively warm;

(b) segregating at least parts of the flow of salt water of comparatively warm temperature into at least a first stream and a second stream;

(c) directly contacting only the first stream of the salt water of comparatively warm temperature with the flow of moist air which is subsequently passed into indirect heat exchange contact with the comparatively cold salt water, while simultaneously passing the first stream over a solar absorption surface, and segregating from the atmosphere and heating by solar means both this first stream of salt



water of comparatively warm temperature and the flow of moist air to predominantly cause evaporation of water into the air so that the air becomes moisture laden;

(d) wetting an evaporative medium with at least a portion of the second stream of salt water of comparatively warm temperature;

(e) passing ambient air through the wetted evaporative medium so that the air absorbs moisture and becomes the flow of moist air which is directly contacted with the first stream of salt water while both are heated by solar means; and

(f) collecting at least the first stream of the salt water of comparatively warm temperature in a warm brine collection means;

and further comprising, during periods of reduced isolation:

(g) utilizing the salt water of comparatively warm temperature collected in the warm brine collection means to produce additional fresh water by evaporative desalination.

4,363,704

SEPARATION OF TOLUENE FROM NON-AROMATIC HYDROCARBONS BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Nov. 20, 1981, Ser. No. 323,544

Int. Cl.³ B01D *3/40*

U.S. Cl. 203—58 **3 Claims**

1. A method for separating toluene from close boiling non-aromatic hydrocarbons which comprises distilling a mixture of toluene and close boiling non-aromatic hydrocarbons in a rectification column in the presence of an effective amount of an extractive agent sufficient to provide a relative volatility of 2.5 or greater comprising effective proportions of phthalic anhydride and/or maleic anhydride and a solvent from the group consisting of glycerol triacetate, dimethylformamide, ethyl acetoacetate, acetonyl acetone, acetophenone, 2,4-pentanedione, ethylene glycol phenyl ether, dichlorodiethyl ether, dimethylacetamide, benzophenone, ethylene glycol diacetate, furfural, nitrobenzene, 2-nitrotoluene, sulfolane, phenol, dimethylsulfoxide.

4,363,705

PASSIVATING AND SILVER REMOVAL METHOD

Csaba K. Hunyar, Glendale, and Gary A. Hand, Azusa, both of Calif., assignors to Capitol Records, Inc., Hollywood, Calif.

Filed Jul. 16, 1981, Ser. No. 284,052

Int. Cl.³ C25D *1/22*

U.S. Cl. 204—5 **11 Claims**

1. In a method for producing a nickel image of a nickel plate comprising the step of plating the nickel plate with a nickel containing solution, the improvement comprising of step of applying to the surface of the nickel plate, before the step of plating, an aqueous solution containing a water soluble persulphate composition in an amount of at least 0.01 gram per liter of solution, the persulphate composition being selected from the group consisting of ammonium and alkali metal persulphates and combinations thereof.

4,363,706

ANODE

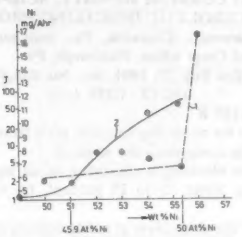
David E. Williams, Abingdon; Kamal K. Verma, Birmingham, and John M. Fisher, Tamworth, all of England, assignors to IMI Kynoch Limited, Birmingham, England

Filed Feb. 25, 1981, Ser. No. 238,023

Claims priority, application United Kingdom, Mar. 7, 1980, 8007789

Int. Cl.³ C25C *1/08*; C25B *11/04*

U.S. Cl. 204—105 R **14 Claims**



1. An electrode for an electrowinning cell for electrolysis of an acid medium in which the anodically active material is formed of an alloy of titanium and nickel, the nickel content being in the region of 51 to 55 wt% of the sum of the titanium and nickel contents.

4,363,707

ACTIVATED NICKEL-CONTAINING ELECTRODE AND ITS USE PARTICULARLY FOR WATER ELECTROLYSIS

Michel Prigent, Rueil Malmaison, and Lucien Martin, Issy les Moulineaux, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 18, 1980, Ser. No. 160,785

Claims priority, application France, Jun. 18, 1979, 79 15750

Int. Cl.³ C25B *1/04, 11/06*; B05D *1/00*

U.S. Cl. 204—129 **9 Claims**

1. A safe, stable low polarization electrode, produced by the process comprising the steps of:

(a) sulfiding a layer of divided metallic nickel or nickel-containing metal alloy consisting essentially of nickel and 0–80% by weight of Fe, Co, Cr or Mn and/or 0–15% by weight of Mg, Al, Si, Ti, V, Cu, Zn, Zr, Nb, Mo, Sn, La, Ta, W, Pb or Bi, with respect to the nickel, said layer being previously deposited on an electrically conductive substrate, under conditions producing substantially only superficial sulfur deposition; and thereafter

(b) heating the resultant superficially sulfided electrode at 200°–600° C. in an inert gas atmosphere or in a vacuum.

9. In the electrolysis of water using at least one electrode, the

improvement comprising using as said electrode the electrode of claim 1.

4,363,708

PROCESS FOR EXPOSING SILICON CRYSTALS ON THE SURFACE OF A COMPONENT OF AN ALUMINUM ALLOY OF HIGH SILICON CONTENT

Wilfried Räuchle, Ostfildern; Walter Preisendanz, Hardt, and Leonhard Scholtissek, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 263,909

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020012

Int. Cl.³ C25F *3/04*

U.S. Cl. 204—129.75 35 Claims

1. Process for exposing the silicon crystals on the surface of a component of an aluminum alloy containing 6–20% by weight of silicon and with undissolved silicon particles, by removing aluminum on the alloy surface with the use of electric current, characterized in that the surface is connected as the cathode and is subjected to an electrolysis with a minimum current density of 0.5 A/dm^2 in an electrolyte containing an aqueous alkali nitrate solution which is at least 0.01-molar with respect to the nitrate ions.

4,363,709

HIGH CURRENT DENSITY, ACID-FREE ELECTROLYTIC DESCALING PROCESS

Donald R. Zaremski, Cheswick, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Feb. 27, 1981, Ser. No. 238,896

Int. Cl.³ C25F *1/06*

U.S. Cl. 204—145 R 13 Claims

1. A process for removing an oxide scale from the surface of a metallic body comprising the steps of:

providing an electrolyte consisting of an aqueous solution containing about 15 to 25 percent, by weight, sodium sulfate,

maintaining the electrolyte at a temperature of at least about 150° F.,

immersing the metallic body into the electrolyte such that the surface to be descaled is exposed to the electrolyte,

subjecting the metallic body as the anode to the action of a direct electric current for a period of at least 10 seconds at a current density of at least 3 amperes per square inch until the metallic body is substantially descaled, and

removing the metallic body from the electrolyte.

4,363,710

POLYADDUCTS OF AMMONIA AND EPOXIDE COMPOUNDS, PROCESSES FOR THEIR MODIFICATION, AND THEIR USE

Fritz E. Kempter, Mannheim; Eberhard Schupp, Schwetzingen; Hans-Uwe Schenck, Wachenheim, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

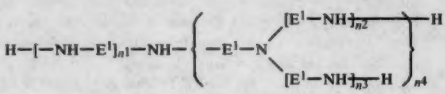
Division of Ser. No. 213,174, Dec. 4, 1980, Pat. No. 4,310,645, which is a division of Ser. No. 137,748, Apr. 7, 1980, Pat. No. 4,291,147. This application Oct. 30, 1981, Ser. No. 316,797

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914297

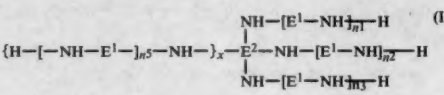
Int. Cl.³ C25D *13/06*

U.S. Cl. 204—181 C 1 Claim

1. A process for forming a cathodic electrocoated finish on a metal surface which comprises: placing the metal object to be coated in a bath of an aqueous solution or dispersion of a polyadduct of ammonia and epoxide compounds, which consists of epoxide-free reaction products of ammonia and diepoxides, triepoxides and/or tetraepoxides, from 1.75 to 10 moles of ammonia having been employed per epoxide group and 1 mole of ammonia having been reacted with from 1.2 to 2.0 equivalents of epoxide, so that if diepoxide compounds are used products of the formula (I)



are obtained, while if triepoxides and/or tetraepoxide compounds are used, by themselves, or together with diepoxide compounds, products of the formula II



(II)

are produced; in these formulae, the E^1's are identical or different hydroxyl-containing divalent radicals and the E^2's are identical or different hydroxyl-containing trivalent or tetravalent radicals, resulting from the opening of the oxirane rings of epoxide compounds containing two, three or four epoxide groups in the molecule, n^1, n^3 and n^5 are from 0 to 3, n^2 and n^4 are from 1 to 3 and X is 0 or 1, and one or more of the divalent radicals E^1 in the formula (II) may or may not be replaced by polyvalent radicals E^2, said polyadduct being at least partially protonized with an acid; passing a current of electricity through the bath whereby a coating is formed on the cathodic surface of the metal object; rinsing the metal object to remove residual bath liquor; and thereafter heating the surface to harden the coating.

4,363,711

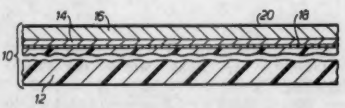
METHOD OF MAKING PHOTOCONDUCTIVE COATING

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Division of Ser. No. 798,876, May 20, 1977, Pat. No. 4,269,919, which is a continuation-in-part of Ser. No. 704,780, Jul. 13, 1976, Pat. No. 4,025,339, and a continuation of Ser. No. 434,699, Jan. 18, 1974, abandoned, and a continuation-in-part of Ser. No. 378,180, Jul. 11, 1973, abandoned, and a continuation-in-part of Ser. No. 323,132, Jan. 12, 1973, abandoned, and a continuation-in-part of Ser. No. 260,848, Jun. 8, 1972, abandoned. This application Apr. 21, 1980, Ser. No. 142,145

Int. Cl.³ B23C *15/00*

U.S. Cl. 204—192 P 15 Claims



1. In a method of depositing a wholly inorganic dielectric photoconductive coating onto a substrate in which there is a pressure vessel having therein target means comprising at least one target of the material to be deposited, a supply of substrate, an anode in the vessel, means for leading the substrate to pass over and in engagement with the anode during the sputtering process, an external source of radio frequency energy having electrical couplings to the anode, target means and shielding arranged in the vicinity of the anode and target means, a supply of background gas including an inert ionizable gas and a second gas having at least one constituent for preventing disassociation of the compound during sputtering, means for establishing and maintaining a stable condition of sputtering plasma in the vessel between the target means and the anode, the steps of:

A. permitting a minute quantity of oxygen to be present in

the vessel during the sputtering in an amount sufficient to form a barrier layer on the surface of the sputtered coating which includes oxygen in a combined form;

B. coupling the external radio frequency energy source to the target means and the shielding so as to establish a high negative potential at the target means and ground potential at the shielding;

C. coupling the anode with respect to the external radio frequency energy source and ground to provide a bias potential at the anode of about negative ten to negative 100 volts to produce a second dark space at the anode in addition to the usual first dark space at the cathode, the dark spaces being respectively on opposite sides of the sputtering plasma during sputtering;

D. leading the substrate over and in engagement with the anode and at a location relative to the second dark space so that the said second dark space is between the sputtering plasma and substrate; and

E. introducing the background gas during the sputtering and permit the minute quantities of oxygen in the vessel to react with the surface of the sputtered coating to form a barrier layer thereon including oxygen in a combined form having a thickness of the order of 50 to 75 Angstrom units.

4,363,712
DEVICE FOR GALVANIC PRECIPITATION OF ALUMINUM

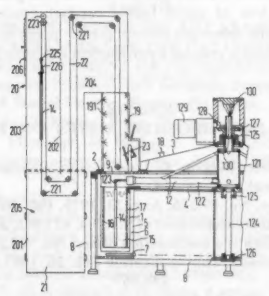
Siegfried Birkle, Hoechstadt an der Aisch; Johann Gehring, Spardorf, and Klaus Stoeger, Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,812

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044975

Int. Cl.³ C25D *17/06*

U.S. Cl. 204—199 **7 Claims**



1. An improved galvanizing device for the galvanic precipitation of aluminum from an anhydrous, aprotic, and oxygen-free aluminum-organic electrolyte of the type having an annularly shaped galvanizing trough, which is sealed from the atmosphere and chargeable with a protective gas, and a rotatable contacting and holding device, located at a vertical rotational axis of the trough, the device having a plurality of support arms radiating outwardly from the rotational axis, with goods carriers able to be selectively attached to the support arms for passage around and through the galvanizing trough, wherein the improvement comprises:

a charging lock; and

a discharging lock, both of said locks attached to the galvanizing trough and each comprising:

a preliminary chamber,

a main chamber,

a U-shaped fluid lock connecting said preliminary chamber to said main chamber, forming a gaseous seal, and

an endless chain conveyor attached to and running continuously through the preliminary chamber, the main chamber, and the fluid lock, whereby the goods carriers may be conveyed through the chambers of the charging lock, into the galvanizing trough, and through the discharging lock, thereby maintaining the protective atmosphere of the galvanizing trough.

4,363,713
ELECTROLYTIC HALOGEN GENERATORS

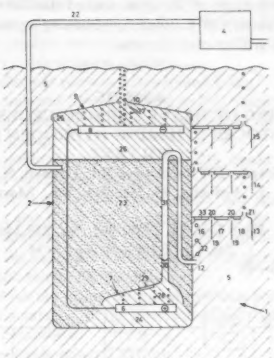
Jeffery P. Bindon, Durban, South Africa, assignor to Roecar Holdings (Netherlands Antilles), Amsterdam, Netherlands

Filed Jan. 19, 1981, Ser. No. 226,512

Claims priority, application South Africa, Jan. 17, 1980, 80/0285

Int. Cl.³ C25B *9/00, 1/26*

U.S. Cl. 204—278 **5 Claims**



1. Apparatus for the electrolytic generation of a halogen from a solid halide, comprising: an anode and a cathode in a single compartment which is adapted to accommodate the halide in a bed of a predetermined depth, the anode being located at the bottom of the halide bed and disturbance, in use, of the halide bed by the gaseous halogen formed on the anode surface being prevented by the provision, above the anode, of a collector for the halide and a conduit arranged to convey the collected halogen from the compartment, the formation, in use, of a stagnant layer of catholyte-rich liquid between the cathode and the halide bed being promoted by the location of the cathode a predetermined distance above the halide bed level, the distance being sufficient for the turbulence created by the gaseous product formed on the surface of the cathode to occur above the stagnant layer, a vent being provided above the cathode to exhaust the gaseous product, and the compartment being open to a source of fresh water above the halide bed level for the dissolution, into the fresh water of the catholyte.

4,363,714
O-ALKYLATED/O-ACYLATED COAL LIQUIDS

Ronald Liotta, Clark, and Martin L. Gorbaty, Westfield, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 69,066, Aug. 23, 1979, Pat. No. 4,259,173, which is a continuation-in-part of Ser. No. 969,361, Dec. 14, 1978, abandoned. This application Dec. 15, 1980, Ser. No. 216,627

Int. Cl.³ C10G *1/00*; C10C *00/00*; C10G *00/00, 1/06*

U.S. Cl. 208—14 **4 Claims**

1. A coal liquid in which the hydrogen of substantially all of

the hydroxyl groups of the coal liquid have been replaced with C_1 to C_{20} alkyl or acyl groups.

4,363,715

PRODUCTION OF CARBON ARTIFACT PRECURSORS

Ghazi Dickakian, Scotch Plains, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 14, 1981, Ser. No. 225,060
Int. Cl.[3] C10C 1/20, 1/18
U.S. Cl. 208—40 11 Claims

1. A process for preparing a pitch suitable for carbon artifact manufacture comprising:

providing a cat cracker bottom which boils in the range from about 200° C. to about 550° C.;

heating said cat cracker bottom to obtain a middle fractions distillate generally boiling in the range of from approximately 450° C. to 510° C.;

heat soaking said distillate at elevated temperatures to provide a pitch; and,

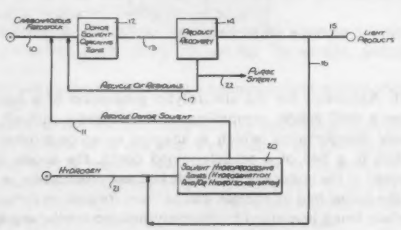
vacuum stripping said heat soaked distillate to remove at least a portion of the heat soaked distillate which boils below about 400° C., thereby obtaining a pitch suitable for carbon artifact manufacture.

4,363,716

CRACKING OF HEAVY CARBONACEOUS LIQUID FEEDSTOCKS UTILIZING HYDROGEN DONOR SOLVENT

Marvin I. Greene, 201 Beechwood Rd., Oradell, N.J. 07649, and Abraham P. Gelbein, 45 Headley Rd., Morristown, N.J. 07960

Filed Feb. 26, 1981, Ser. No. 238,344
Int. Cl.[3] C10G 49/20, 55/04
U.S. Cl. 208—80 7 Claims



1. A hydrogen donor solvent cracking process for upgrading heavy carbonaceous liquids having a melting point below 250° C. to lighter products comprising in serial combination the steps of:

(a) adding a stream of hydrogen-donating material, obtained as stated hereinafter, and heavy carbonaceous feedstock in weight ratio of at least 0.25 part of hydrogen-donating material per part of heavy carbonaceous feedstock, to a cracking reaction zone, free of externally-supplied catalyst;

(b) heating the reaction mixture resulting from step (a) in said cracking zone at a temperature of 250° C. to 800° C. for a total residence time at the specified temperature of from 15 seconds to 5 hours to produce hydrogen-enriched cracked products;

(c) removing the resulting products from the cracking reaction zone and recovering therefrom a middle distillate fraction boiling in the range of 175° C. to 300° C. atmospheric equivalent temperature;

(d) subjecting said middle distillate fraction to a selective hydrogenation step in the presence of a solid based metal catalyst thereby adding hydrogen to obtain a replenished hydrogen-donating material richer in hydrogen containing at least 30% by weight of 2-ring hydroaromatics having 10 to 20 carbon atoms per molecule;

(e) hydroisomerizing said replenished hydrogen-donating material in the presence of a solid acidic catalyst;

(f) recycling said hydrogen-donating material obtained in step (d) to the cracking zone specified in step (a); and

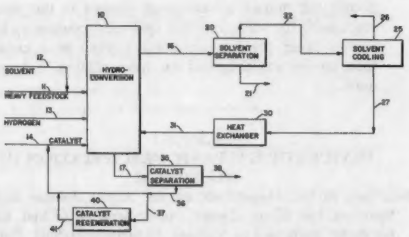
(g) recovering, from the products produced in said cracking zone, cracked light products boiling below 482° C.

4,363,717

CONVERSION OF HEAVY HYDROCARBON OILS

Bruce P. Pelrine, Trenton; Nai Y. Chen, Titusville, both of N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,284
Int. Cl.[3] C10G 11/08, 47/08, 47/32
U.S. Cl. 208—108 28 Claims



1. A process for conversion of a heavy hydrocarbon oil which comprises (1) contacting a heavy hydrocarbon oil with a metal halide catalyst in admixture with a solvent component under supercritical conditions to form a dense-gas solvent extract phase and a residual asphaltic phase; (2) separating the phases to provide a dense-gas solvent extract phase which is substantially free of metal halide catalyst content; and (3) fractionating the dense-gas solvent extract phase to remove the solvent and yield a refined hydrocarbon crackate fraction.

4,363,718

CRYSTALLINE CHROMOSILICATES AND PROCESS USES

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

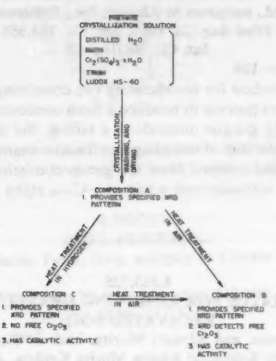
Division of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Feb. 26, 1981, Ser. No. 238,567
Int. Cl.[3] C10G 47/04; C07C 5/22
U.S. Cl. 208—110 30 Claims

1. A process for the conversion of a hydrocarbon stream, which process comprises contacting said stream under suitable hydrocarbon conversion conditions with a catalyst comprising a crystalline chromosilicate, which chromosilicate comprises a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, Å	Assigned Strength
11.15 ± 0.2	W
9.96 ± 0.2	VS
5.99 ± 0.1	VW
5.71 ± 0.1	VW
4.97 ± 0.1	W
3.85 ± 0.07	M

-continued

Interplanar Spacing d, A	Assigned Strength
3.82 ± 0.07	MS
3.75 ± 0.05	M
3.32 ± 0.05	VW
1.99 ± 0.02	W



and having the following composition in terms of mole ratios of oxides:

$$0.9 \pm 0.2\ M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is within the range of about 4 to about 500, and Z is within the range of 0 to about 160.

4,363,719

PROCESS FOR IMPROVING THE STABILITY OF CATALYSTS FOR THE CATALYTIC HYDROTREATMENT OF PETROLEUM CUTS

Jacques Bousquet, Irigny; Claude Gueguen, Septeme Pont L'Eveque, and Daniel Vautier, Serezin Du Rhone, all of France, assignors to Elf France, Paris, France

Filed Apr. 28, 1981, Ser. No. 258,321
Claims priority, application France, May 8, 1980, 80 10307
Int. Cl.³ C10G *47/02, 65/00*
U.S. Cl. 208—111 **6 Claims**

1. In a method for the catalytic hydrotreatment of petroleum cuts containing heavy n-paraffins, the improvement comprising conducting said catalytic hydrotreatment reaction in the presence of a catalyst composition comprising:

(a) 5–90% of a catalyst containing a metal from each of Group VI and Group VIII of the Periodic Table on a non-acid or weak acid oxide support; and

(b) 95–10% of a catalyst containing a metal from each of Group VI and Group VIII of the Periodic Table on a silica-alumina support having a silica content greater than 5% by weight.

4,363,720

PASSIVATING METALS ON CRACKING CATALYSTS WITH ZINC

Eugene H. Hirschberg, Park Forest; Ralph J. Bertolacini, Naperville, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 13, 1981, Ser. No. 263,297
Int. Cl.³ C10G *11/02, 11/18*
U.S. Cl. 208—120 **9 Claims**

1. A passivation process which comprises contacting, under cracking conditions: (a) a hydrocarbon feedstock containing a level of contaminant metals at least about 1.0 ppm Nickel Equivalent; (b) a cracking catalyst; and (c) a zinc-containing treating agent present in an amount from about 3.0 to 15.0 weight percent, calculated as the metal and based on the total weight of the solid particles.

4,363,721

METHOD OF USING CATALYSTS FOR REFORMING OR ISOMERIZING HYDROCARBONS IN THE PRESENCE OF HYDROGEN

Philippe Engelhard, and Georges Szabo, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 152,126, May 21, 1980, Pat. No. 4,329,258.
This application Dec. 14, 1981, Ser. No. 330,102
Claims priority, application France, May 22, 1979, 79 13029
Int. Cl.³ C10G *35/085*
U.S. Cl. 208—139 **24 Claims**

1. Method for the reforming of hydrocarbon fractions whose sulfur content is less than 10 ppm, and whose boiling temperature at atmospheric pressure ranges from 35° to 250° C., comprising the use of a catalyst, in the presence of hydrogen, wherein said catalyst comprises:

a refractory oxide-mineral carrier;

a halogen element present in combined form;

in free or combined form from 0.02 to 2%, based on the total weight of catalyst, of at least one metal M1 from the platinum group;

in free or combined form from 0.02 to 2%, based on the total weight of catalyst, of tin; and

in combined form, at least one metal M2 selected from groups Ia and IIa of the periodic table of the elements in such an amount that the ratio M2/M1 of the number of atoms of the metal M2 to the number of atoms of the metal M1 in such that $0.2 \leqq M2/M1 \leqq 10$.

13. Method for the isomerization of hydrocarbons, comprising the use of a catalyst, in the presence of hydrogen, wherein said catalyst comprises:

a refractory oxide-mineral carrier;

a halogen element present in combined form;

in free or combined form from 0.02 to 2%, based on the total weight of catalyst, of at least one metal M1 from the platinum group;

in free or combined form from 0.02 to 2%, based on the total weight of catalyst, of tin; and

in combined form, at least one metal M2 selected from groups Ia and IIa of the periodic table of the elements in such an amount that the ratio M2/M1 of the number of atoms of the metal M2 to the number of atoms of the metal M1 is such that $0.2 \leqq M2/M1 \leqq 10$.

4,363,722

PROCESS AND APPARATUS FOR TREATING TITANIUM MACHINING SCRAP

John E. Dresty, Jr., Glastonbury, and Eugene M. Klein, West Hartford, both of Conn., assignors to Suisman & Blumenthal, Incorporated, Hartford, Conn.

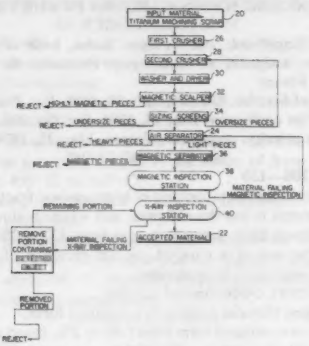
Filed Dec. 31, 1980, Ser. No. 221,563
Int. Cl.³ B07B *15/00*
U.S. Cl. 209—3 **14 Claims**

1. In a process for treating titanium machining scrap to remove tungsten carbide bits and similar high density inclusions, the improvement comprising the performance at some point in the process of the steps of:

screening the work material of said process to obtain a quantity of screened pieces substantially all of which screened pieces fall within a given size range,

performing an air separation operation on said screened pieces to separate them into a "heavy" product and a "light" product, said air separation operation including the substeps of providing a stoner type air separator having an elongated air conducting deck which slopes in its

longitudinal direction only, vibrating said deck generally in the direction of its incline, flowing air upwardly through said deck, and feeding said screened pieces onto the upper surface of said deck whereby said screened pieces fed to said deck are stratified into a lower stratum of "heavy" product particles which are conveyed by the vibratory motion of said deck upwardly longitudinally of said deck to the upper end of said deck and an upper



stratum of "light" product particles which flow downwardly longitudinally of said deck to the lower end of said deck,

rejecting from the process the "heavy" product particles which pass over the upper end of said deck, and

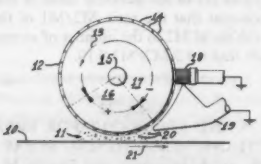
accepting for further treatment in the process the "light" product particles which pass from the lower end of said deck.

4,363,723

MULTIFIELD ELECTROSTATIC SEPARATOR

Frank S. Knoll, Jacksonville, Fla.; Joseph B. Taylor, Atlanta, Ga., and Peter J. Hoyles, Jacksonville, Fla., assignors to Carpco, Inc., Jacksonville, Fla.

Filed Apr. 27, 1981, Ser. No. 257,949
Int. Cl.³ B01D *35/00*
U.S. Cl. 209—128 **26 Claims**



16. A method for separating or removing particles according to their polarizability comprising

(a) passing said particles to be separated or removed along a path in close proximity to and beneath a first smooth surface having conductive elements mounted thereon;

(b) moving said first surface successively through

(1) a first zone where said surface receives a charge and induces a charge on said polarizable particles when in close proximity to said particles to be separated or removed to cause the more polarizable particles to be attracted by and to said first zone of said first surface, and then through

(2) a second zone where said surface receives an opposite charge whereby said more polarizable particles on said first surface are repelled therefrom; and

(c) collecting said more polarizable particles from said second zone.

4,363,724

USE OF C_{8-34} ALPHA OLEFIN SULFONATES TO IMPROVE AND ENHANCE THE FLOTATION AND COLLECTION PROCESS USED FOR BARITE

George W. Panzer, Timonium, and William Boyer, Baldwin, both of Md., assignors to Alcolac, Inc., Baltimore, Md.

Filed Aug. 26, 1980, Ser. No. 181,658
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—166 **14 Claims**

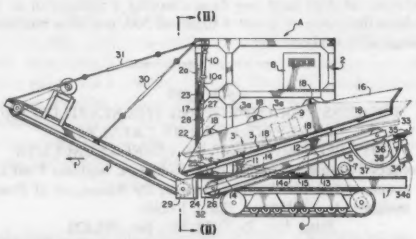
12. In a method for beneficiating ore containing barite by a froth flotation process to produce a froth concentrate of barite while leaving gangue minerals in a tailing, the improvement comprising the step of including an effective amount of at least one compound selected from the group consisting of a C_{8-34} alpha olefin sulfonate and a salt of a C_{8-34} alpha olefin sulfonate.

4,363,725

APPARATUS FOR REMOVING GRAVEL FROM EXCAVATED SOIL

Takeshi Morita, and Kiyoshi Morita, both of Furano, Japan, assignors to Kabushiki Kaisha Morita Kouken, Japan

Filed Aug. 14, 1981, Ser. No. 292,443
Claims priority, application Japan, Aug. 18, 1980, 55-113641; Feb. 25, 1981, 56-25542[U]
Int. Cl.³ B07B *1/28*
U.S. Cl. 209—257 **17 Claims**



1. An apparatus for removing gravel from excavated soil comprising a chassis having endless tracks; a frame structure mounted upright on said chassis; a sieving means resiliently supported on the chassis at a predetermined inclination within said frame structure, a loading port at the upper part thereof, and vibration motors operatively secured thereto to vibrate the same; and two inclined conveyors arranged below the sieving means, one of said conveyors serving to convey stone and gravel in the forward direction and the other of said conveyors serving to convey soil in the rearward direction, the lower ends of said conveyors being located adjacent to one another.

4,363,726

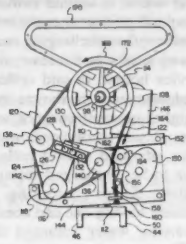
ORE CONCENTRATOR

George J. Birds, Jr., 39148 Canyon Dr., Lebec, Calif. 93243

Filed May 27, 1981, Ser. No. 267,635
Int. Cl.³ B03B *5/74*
U.S. Cl. 209—436 **5 Claims**

1. In combination with an ore concentrator including a pan having an encompassing sidewall, a bottom wall and a central aperture in said bottom wall, means coupled to said pan for imparting rotation thereto and means upstanding from said

bottom wall for advancing concentrates from said sidewall to said central aperture during rotation of said pan, the improvement wherein said rotation imparting means includes means for oscillating said pan back-and-forth circumferentially.

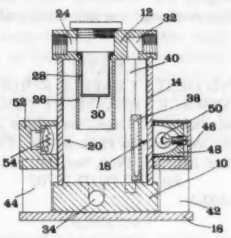


4,363,727

FUEL PURIFIER

Filippo Bonifacio, Turin, Italy, assignor to Celeste Carrer, Turin, Italy

Filed Oct. 29, 1981, Ser. No. 316,498
Int. Cl.³ B01D *35/02, 17/02*
U.S. Cl. 210—96.1 **3 Claims**



1. A device for separating liquids of different densities, particularly for purifying liquid hydrocarbon fuels from water, comprising a decantation vessel having in inlet opening and an outlet opening for the liquid to be purified, both normally open and arranged at an upper end of said decantation vessel, and a second outlet opening normally closed and arranged at a lower end of said decantation vessel; a source of light for casting a beam of light through a lower wall portion of said decantation vessel; a photocell arranged on a lower wall portion of said decantation vessel in a position opposite said source of light for receiving said beam of light; an opaque float of a weight heavier than the liquid to be purified, but lighter than water, said opaque float being movably mounted within said decantation vessel for movement between a lower position for intercepting said beam of light and an upper position for receiving said beam of light; said photocell being arranged to control closure of said first outlet opening and opening of said second outlet opening when said opaque float is in said upper position.

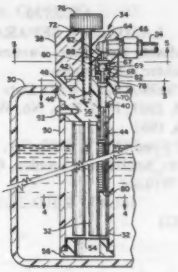
4,363,728

AUTOMATIC CHLORINATOR FOR SWIMMING POOLS

William P. Guglielmi, 66 Indian Trail, Vernon, Conn. 06066, and Richard E. Caserta, 95 N. Mountain Rd., Canton, Conn. 06019

Filed Apr. 27, 1981, Ser. No. 257,644
Int. Cl.³ C02B *3/06*
U.S. Cl. 210—205 **18 Claims**

1. In a chlorinator for metering a chlorinating liquid to a swimming pool and having an outlet and a metering system for conducting chlorinating liquid at a metered rate to the outlet, the improvement wherein the metering system comprises a bank of a plurality of independent metering tubes, each having an inlet end for receiving chlorinating liquid and an outlet end, said plurality of metering tubes having restricted liquid passageways of different resistence to liquid flow for metering chlorinating liquid from their inlet to their outlet at differing rates, and selector valve means for selectively connecting the plurality of metering tubes for metering chlorinating liquid to the chlorinator outlet for selectively controlling the metered rate of chlorinating liquid to the swimming pool.

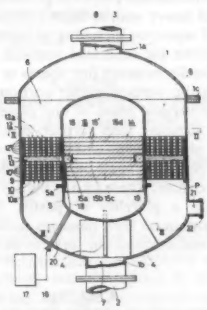


4,363,729

MAGNETIC FILTER

Junichi Yano, Oobu, Japan, assignor to Daidotokushuko Kabushiki Kaisha, Japan

Filed Jun. 18, 1981, Ser. No. 274,991
Claims priority, application Japan, Jun. 18, 1980, 55/82539
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—223 **4 Claims**



1. A magnetic filter comprising:
(i) a filter container having an inlet and an outlet,
(ii) a sealed hollow inner body disposed coaxially within said filter container and bounding therewith an annular passage communicating with said inlet and outlet,
(iii) an annular filter element of magnetizable material disposed coaxially in said container across said annular passage and having an upstream face and a downstream face,
(iv) a pair of annular perforated pole pieces disposed coaxially in said container and across said flow passage and abutting respectively said upstream face and said downstream face of said filter element, the perforations of said pole pieces providing a plurality of flow paths therethrough, and
(v) a magnetic field generating device disposed in said inner body and comprising an iron core, a coil wound round said core, and a DC power supply means including an

electric wire connected to said coil for energizing the same, said core and coil being disposed coaxially within said pole pieces for transmitting a magnetic field through said pole pieces to said filter element for magnetizing said filter element.

4,363,730

LAMELLAR SEPARATOR

Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter AB, Sweden

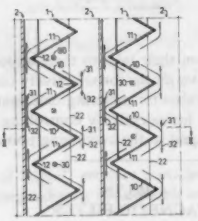
PCT No. PCT/SE80/00233, § 371 Date May 28, 1981, § 102(e) Date May 28, 1981, PCT Pub. No. WO81/01108, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 1, 1980, Ser. No. 269,049

Claims priority, application Sweden, Oct. 18, 1979, 7908653; Dec. 11, 1979, 7910208

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—521 **10 Claims**



1. A lamellar separator containing a lamellar pack comprising elongate, substantially planar lamellae extending substantially horizontally for vertically defining substantially horizontal flow passages or channels for a liquid which is to be purified, said flow passages in their transverse direction being inclined to the horizontal plane for gravitational removal from the lamellae of heavy and/or light pollutants separated from the liquid, said separator including an inlet, a liquid outlet and at least one outlet for separated material, said lamellar pack including vertically oriented first sheets or plates having a first corrugation in the vertical plane, portions of the first plates inclined to the vertical plane of said plates forming said flow passages, said lamellar pack further including vertically oriented second plates corrugated in the horizontal plane, said second plates being disposed on either side of each first plate and being in contact therewith whereby the liquid flow is subdivided into a plurality of partial flows each passing through the horizontal flow passages defined by peaks of the second plates and corrugation surfaces of the first plates.

4,363,731

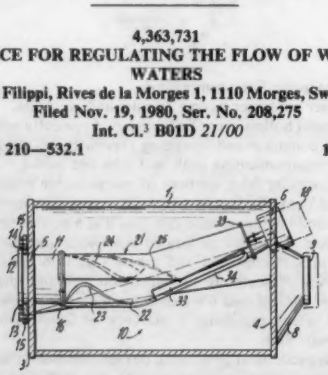
DEVICE FOR REGULATING THE FLOW OF WASTE WATERS

Rodolfo Filippi, Rives de la Morges 1, 1110 Morges, Switzerland

Filed Nov. 19, 1980, Ser. No. 208,275

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—532.1 **15 Claims**



1. A device for regulating the rate of flow of waste water which has mixed with clear rainwater and which is to be transmitted to a purification station, comprising:

a collector chamber having a first orifice for receiving waste water and clear water, a second orifice for discharging water containing a higher concentration of waste matter, and a third orifice for discharging water containing a lower concentration of waste matter; and

an adjustable device housed in said collector chamber for causing a predetermined maximum quantity of water containing a higher concentration of waste matter to be discharged through said second orifice and for causing the remaining water admitted to said collector chamber via said first orifice to be discharged through said third orifice; said adjustable device comprising:

a first conical element having one end connected to said first orifice for receiving water admitted therethrough, and containing baffle means for reducing turbulence in the admitted water; said first conical element having an opening formed therein which permits outlet of water therethrough from said first conical element; and

a second conical element; said two conical elements being oriented with their wider bases toward each other and the conical elements being connected to each other end to end in such a manner that their axes form an obtuse angle in a generally horizontal plane; said second conical element having an end connected to said second orifice for discharging therethrough water having a higher concentration of waste matter; and said second conical element containing a slot the effective area of which is adjustable, for discharging the remaining water into said collector chamber for discharge via said third orifice.

4,363,732

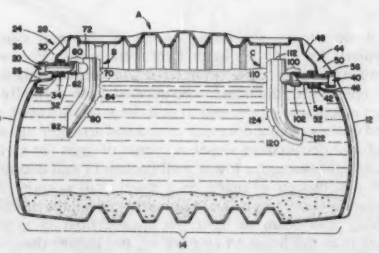
INLET AND OUTLET BAFFLE STRUCTURE FOR SEWAGE TREATMENT TANKS

Fred J. Crates; James L. Fouss, and John J. Parker, all of Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed May 22, 1980, Ser. No. 152,186

Int. Cl.³ B01D *21/02*

U.S. Cl. 210—532.2 **8 Claims**



1. A sewage treatment construction for minimizing fluid turbulence from the ingress of incoming sewage, the construction comprising:

(a) a tank for holdling sewage for treatment, said tank including a first end wall which includes an inlet for receiving incoming sewage and a second end wall which includes an outlet for discharging treated fluids;

(b) an inlet baffle structure for introducing incoming sewage into the tank, said inlet baffle structure comprising:

(i) a first generally tubular portion which is operatively connected at one end with said inlet;

(ii) a second generally tubular portion having a vent aperture adjacent one end, the second generally tubular portion being in fluid connection with the other end of said first generally tubular portion;

(iii) a third generally tubular portion defining a fluid introducing opening at one end through which incoming sewage is introduced into the tank, the third tubular

portion diverging toward the fluid introducing opening such that the flow rate of incoming sewage tends to be slowed as it approaches the fluid introducing opening, whereby turbulence in the tank is reduced; and

(iv) a transition zone providing fluid connection between the other end of said second generally tubular portion and the other end of said third generally tubular portion;

(c) an outlet baffle structure for receiving treated fluid to be discharged from the tank through said outlet, said outlet baffle structure comprising a second generally tubular structure which is in fluid connection with said outlet and which defines a fluid receiving opening through which treated fluids are received for discharge from said tank.

4,363,733
PROCESS FOR WATER TREATMENT BY FLOCCULATION

Francois Meiller, Palaiseau, and Yannick Le Du, Maisons-Alfort, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 108,056, Dec. 28, 1979, abandoned. This application Sep. 17, 1980, Ser. No. 188,147

Claims priority, application France, Dec. 28, 1978, 78 36644; European Pat. Off., Dec. 14, 1979, 79 401017,3

Int. Cl.³ C02F *1/54*

U.S. Cl. 210—727 **26 Claims**

1. A process for the treatment of water comprising sequentially adding to water having a pH in the range of about 6 to about 9 first (i) an iron-containing or aluminum-containing flocculating agent, and then (ii) a flocculation additive comprising a heteropolysaccharide obtained by the fermentation of a carbohydrate via the action of bacteria of the genus Xanthomonas or Arthrobacter, or fungi of the genus Sclerotium.

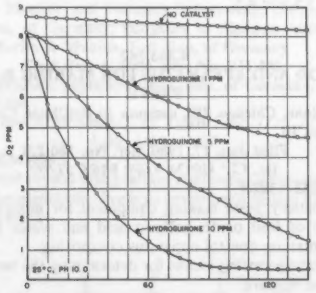
4,363,734
1,3-DIHYDROXY ACETONE AS AN OXYGEN SCAVENGER FOR WATER

Manuel Slovinsky, Woodridge, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 231,824, Feb. 5, 1981, abandoned. This application Aug. 27, 1981, Ser. No. 296,925

Int. Cl.³ C02F *1/20, 1/70*

U.S. Cl. 210—750 **3 Claims**



1. An improved method for scavenging dissolved oxygen from alkaline waters which comprises using dihydroxy acetone catalyzed with at least 1 percent, based on the weight of said dihydroxy acetone, of a catalyst from the group consisting of hydroquinone and a water-soluble compound of manganese.

4,363,735
REMOVAL OF FLY ASH FROM THE SURFACE OF LIQUIDS

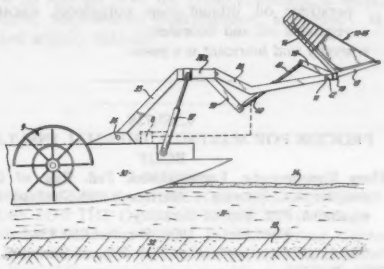
Derek L. Hook, 6 Maltmans Rd., Lymm, Cheshire, England

Filed Apr. 30, 1981, Ser. No. 258,997

Claims priority, application United Kingdom, Dec. 6, 1980, 8039204

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—776 **7 Claims**



1. A method of removing a part of a stratum of fly ash comprising particles of relatively fine mean dimensions from the surface of a liquid comprising:

(a) at least partly submerging a scoop having a plurality of laterally spaced elongate lifting elements below the stratum the spacing between the lifting elements being very much larger than the mean dimensions of the particles;

(b) lifting the elements through the stratum so that at least a part of the fly ash is raised above the stratum on the elements;

(c) allowing the raised ash to drain by liquid flow through the spaces between the elements; and

(d) tilting the elements to discharge the drained ash to a location away from the liquid.

4,363,736
FLUID LOSS CONTROL SYSTEM

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 159,007, Jun. 13, 1980, abandoned. This application Feb. 27, 1981, Ser. No. 239,073

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **10 Claims**

1. A composition capable of imparting fluid loss control to aqueous systems, said composition comprising a mixture of:

(a) a solid, particulate material which is insoluble in the aqueous system and having a particle size wherein at least about 90% of said material is capable of passing through a No. 20 U.S. Standard Sieve; and

(b) a reaction product formed in an aqueous solution of a water soluble hydroxy C_1–C_3 alkyl cellulose between said hydroxyalkyl cellulose and from at least about 1 to 200 percent of stoichiometry based on the hydroxyl groups of the cellulose of an agent capable of cross-linking said cellulose selected from the group consisting of an epihalohydrin, a compound having at least one aldehyde group therein or a compound capable of generating an aldehyde group in situ;

component (a) and (b) being present in a ratio of at least 0.5:1 to 3:1; the reaction between said hydroxyalkyl cellulose and a compound having or capable of generating at least one aldehyde group therein is carried out in an aqueous acidic medium having a pH of 5.5 or less and the reaction between said hydroxyalkyl cellulose and an epihalohydrin is carried out in an aqueous basic medium having a pH of at least about 9.

4,363,737

LUBRICATION PASTES

Alvaro Rodriguez, Calle 126 A No. 36-A-36, Bogota, Colombia

Filed Jun. 15, 1981, Ser. No. 273,656
Int. Cl.³ C10M 5/02, 7/02
U.S. Cl. 252—26 14 Claims

1. A lubricant, comprising:

between 35 and 95 parts by weight of nickel; and

between 5 and 65 parts by weight of fluids selected from the group consisting of silicon oil, mineral oil, naphthenic oil, paraffinic oil, lithium soap, polyglycol, silicate esters, vegetable oil, and fluorides;

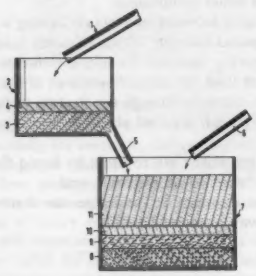
whereby said lubricant is a paste.

4,363,738

PROCESS FOR MAKING A THERMAL INSULATING BODY

Hans Kummermehr, Ludwigshafen, Fed. Rep. of Germany, assignor to Grünzweig + Hartmann und Glasfaser AG, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,854
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942180
Int. Cl.³ C04B 43/02
U.S. Cl. 252—62 24 Claims



1. In a process for making a thermal insulating body by mixing together the ingredients of a highly insulating particulate material, an opacifier and reinforcing fibers, and then compacting the resulting mixture, and wherein the highly insulating material is the major ingredient, the improvement wherein the opacifier and/or the reinforcing fibers are first mixed with a dispersant for said opacifier or fibers to form a first-stage mix, and then mixing the said first-stage mix with the remainder of the said ingredients, prior to compacting.

4,363,739

ALUMINUM HYDROXIDE-BASED SPRAY-ON INSULATING MATERIAL FOR BUILDING AND METHOD FOR THE PREPARATION THEREOF

Tatsuro Okamura, 4-1, Kusae, Ube-shi, Yamaguchi-ken, Japan, and Hideki Irifune, Ube, Japan, assignors to Tatsuro Okamura and Yoshida Kogyo K.K., both of, Japan

Filed Aug. 3, 1981, Ser. No. 289,699
Int. Cl.³ C04B 43/12
U.S. Cl. 252—62 7 Claims

1. A spray-on insulating material for building which comprises an organic fibrous material, gel-like amorphous aluminum hydroxide sludge entrammeling the fibrous material and powdery aluminum hydroxide which is a dried and pulverized material of a gel-like aluminum hydroxide sludge and uniformly blended with the organic fibrous material entrammeled with the amorphous aluminum hydroxide.

4,363,740

PROCESS FOR MAKING CONTROLLED SUDSING DETERGENT POWDER

Michael Curtis, Irby, England; Peter R. Garrett, Pantymwyn, and John Mead, Ewloe, both of Wales, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,675
Claims priority, application United Kingdom, Jul. 29, 1980, 8024742
Int. Cl.³ C11D 17/00
U.S. Cl. 252—91 7 Claims

1. A process for the production of a controlled sudsing fabric washing powder having improved suds suppression effectiveness comprising the steps of:

(a) heating a suds-suppressant/hydrophobic material combination to a temperature above its drop melting point;

(b) combining the suds-suppressant/hydrophobic material combination heated to said temperature above its drop melting point with a spray-dried base powder maintained at a temperature below said drop melting point; and

(c) cooling said suds-suppressant/hydrophobic material combination to a solid or gel.

4,363,741

AUTOMOTIVE COOLING SYSTEM CLEANER

Joseph C. Gould, Norwood, Pa., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 218,416, Dec. 19, 1980. This application Aug. 14, 1981, Ser. No. 293,011
Int. Cl.³ C11D 7/08, 7/14, 7/24; C23G 1/02
U.S. Cl. 252—142 4 Claims

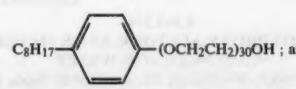
1. An automotive cooling system cleaner consisting essentially of, by weight, from about:

(a) 30.50–97.55% deionized water;

(b) 1–30% citric acid;

(c) 0.9–27% ammonium hydroxide;

(d) 0.5–10% of an octylphenoxypolyethoxyethanol, nonionic surfactant having the formula



(e) 0.05–2.50% of a defoamer comprised of a blend of mineral oils and silica derivatives, having a specific gravity of 0.91–0.93 and a viscosity of 1,000–1,800 centipoise (measured at 25° C. using a #3 spindle at 20 rpm);

the entire composition being adjusted to a pH approximately between 8.5 and 4.5.

4,363,742

METHOD AND APPARATUS FOR MAKING BATTERY PASTE

Milton Stone, Chicago, Ill., assignor to Pettibone Corporation, Chicago, Ill.

Filed Jun. 17, 1980, Ser. No. 160,221
Int. Cl.³ H01M 4/88; F16K 31/00
U.S. Cl. 252—182.1 15 Claims

1. In battery paste making equipment for mixing selected quantities of lead oxide, sulfuric acid and water to form a viscous mixture, control apparatus comprising:

temperature sensing means for determining the temperature of the mixture;

viscosity sensing means for determining the viscosity of the mixture;

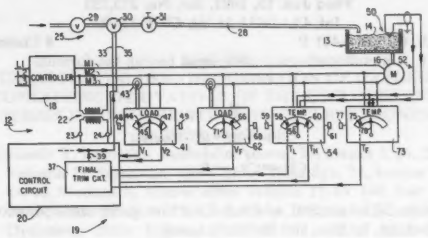
valve means for admitting water to the mixture;

coincidence means responsive to said temperature sensing means determining the temperature of the mixture to be a minimum temperature or above and to said viscosity sensing means determining the viscosity of the mixture to be at

or above a maximum acceptable value of viscosity, for activating said valve means to admit water to the mixture until the viscosity thereof is reduced to a value below the maximum acceptable value, whereupon said viscosity sensing means disables said coincidence means, thereby de-activating said valve means.

13. In a method of making battery paste by mixing selected quantities of lead oxide and water to form a mixture the viscosity of which ascends on a time-viscosity curve, and then admixing a selected quantity of sulfuric acid to form a reaction mixture the viscosity of which initially descends on such curve, the curve then changing in slope to reach a point of minimum viscosity, the temperature of said reaction mixture forming a time-temperature curve having a temperature peak therein at a time subsequent to acid addition, the steps which comprise:

sensing the temperature of said reaction mixture,



sensing the viscosity of said reaction mixture, and

adding a quantity of water to the reaction mixture when the temperature thereof rises to a predetermined temperature or above and the viscosity thereof is at or above a predetermined value, until the viscosity is reduced to a value below the predetermined value,

said predetermined temperature corresponding approximately to at least one of (a) a temperature at which a predetermined time-viscosity curve reaches a point adjacent to said minimum viscosity, and (b) a temperature at a point on a predetermined time-temperature curve which corresponds to said predetermined time-viscosity curve, at a point adjacent to and below its peak, whereby the water content of the reaction mixture is adjusted so as to approximate the water content desired in the final product.

4,363,743

LIQUID CRYSTALS HAVING PLEOCHROIC DYES

Alexander Moeller, and Guenther Scherowsky, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

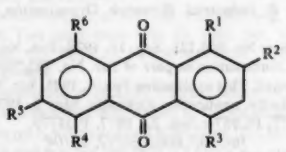
Filed Feb. 4, 1981, Ser. No. 231,483

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007198

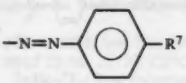
Int. Cl.[3] **C09K** *3/34;* **G02F** *1/13;* **C09B** *1/02, 1/20, 1/50, 1/56, 1/32, 1/54, 43/22*

U.S. Cl. 252—299.1 **3 Claims**

1. A liquid crystal composition containing a pleochroic dye wherein the pleochroic dye is an anthraquinone dye having the general formula:



wherein R^1, R^3, R^4 and R^6 are selected from the group consisting of H, OH, OCH_3, NO_2, NH_2 and $NHCH_3$; and R^2 and R^5 are each



wherein R^7 is selected from the group consisting of alkyl-, aryl-, amino-, alkylamino-, dialkylamino-, arylamino-, alkyloxy-, and aryloxy radicals.

4,363,744

MIXTURES OF OPTICAL BRIGHTENERS AND THEIR USE FOR THE OPTICAL BRIGHTENING

Dieter Günther, Kelkheim; Rüdiger Erckel, Eppstein; Günter Rösch, Bad Soden am Taunus, and Heinz Probst, Sulzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

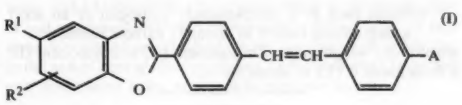
Continuation of Ser. No. 73,938, Sep. 10, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,454

Int. Cl.[3] **C09K** *11/06;* **D01P** *1/38*

U.S. Cl. 252—301.22 **4 Claims**

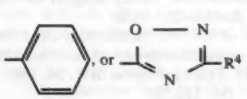
1. Mixtures of optical brighteners consisting essentially of from

(a) 0.98 to 0.50 part by weight of a mixture consisting essentially of from 0.05 to 0.95 part by weight of a compound of the formula I



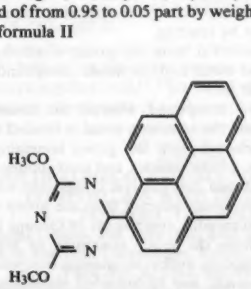
(I)

wherein R^1 is hydrogen or C_1–C_4 alkyl; R^2 is in the 6- or 7-position and is hydrogen or C_1–C_4 alkyl; and A is selected from the following formulas: —CN, —COOH, $—COOCH_3$,



R^4 being C_1–C_4 alkyl or β-hydroxyethyl;

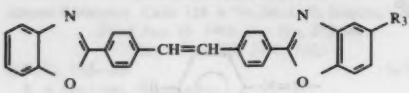
and of from 0.95 to 0.05 part by weight of a compound of the formula II



(II)

and of from

(b) 0.02 to 0.5 parts by weight of a compound of the formula III



(III)

wherein R_3 is hydrogen or C_1–C_4-alkyl.

4,363,745

ANTIOXIDANT COMPOSITIONS

Kenneth J. Hinze, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 141,853, Apr. 21, 1980, Pat. No. 4,265,783. This application Apr. 1, 1981, Ser. No. 249,780

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ C09K *15/28*

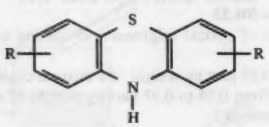
U.S. Cl. 252—402 **5 Claims**

1. An antioxidant composition comprising

(A) from about 10 to about 85 percent by weight of a hindered phenolic antioxidant;

(B) from about 10 to about 85 percent by weight of 4,4'-bis-(α,α-dimethylbenzyl) diphenyl amine; and

(C) from about 1 to about 34 percent by weight of a phenothiazine compound represented by the formula



wherein each R is independently hydrogen or an alkyl group having from 1 to about 12 carbon atoms; and wherein the weight ratio of component (A) to component (B) is from about 0.17:1 to about 5.67:1.

4,363,746

COMPOSITION OF MATTER AND METHOD OF PREPARING SAME, CATALYST, METHOD OF PRODUCING THE CATALYST AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Charles E. Capshew, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 42,251, May 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 927,079, Jul. 24, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 132,731

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **31 Claims**

1. A method of producing a catalyst comprising forming a first catalyst component by reacting

(A) a metal halide selected from the group consisting of metal dihalides and metal hydroxyhalide compounds of Group IIA and IIB, and

(B) a transition metal compound wherein the transition metal is tatanium and the transition metal is bonded to at least one radial selected from the group consisting of hydrocarbyl oxides, imides, amides, and mercaptides; and

reacting a solution of said first catalyst component with a second catalyst component selected from the group consisting of (a) organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and hydrocarbyl aluminum halides; (b) metal halides and oxyhalides of metals of Groups IIIA, IVA, IVB, and VB; (c) hydrogen halides; and (d) organic acid halides selected from the group consisting of compounds having the formula

wherein R‴ is an alkyl, aryl, or cycloalkyl group or combination thereof and X is a halide; and then treating the solid product resulting from the combination of said first and second catalyst components with a titanium tetrahalide capable of enhancing the activity of said catalyst.

4,363,747

METALLOCARBORANE PRECURSOR AND CATALYST

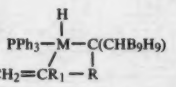
M. Frederick Hawthorne, Encino, Calif., and Mark S. Delaney, Midland, Mich., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jun. 15, 1981, Ser. No. 273,731

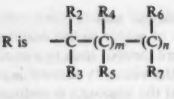
Int. Cl.³ B01J *31/12;* **C07F** *15/00*

U.S. Cl. 252—431 P **8 Claims**

1. A metallocarborane compound having the formula



where M is a metal selected from the group consisting of Rhodium, Iridium and Ruthenium and



where m is 0 or 1 and when m is 1 n is 0 or 1 and when m is 0 n is 0, and wherein each of R_1, R_2, R_3, R_4, R_5, R_6, and R_7 is hydrogen, lower alky or aryl.

4,363,748

CATALYST COMPOSITION FOR PRODUCING TERTIARY-BUTYLSTYRENE

Glen F. Crum, and Samuel J. Paton, both of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Feb. 2, 1982, Ser. No. 345,157

Int. Cl.³ B01J *27/18*

U.S. Cl. 252—437 **3 Claims**

1. A coprecipitated catalyst composition adapted for oxydehydrogenation reactions, which catalyst composition corresponds to the formula:

$$Al_{5\text{-}20}Ca_{5\text{-}20}Ce_1(PO_4)_x$$

wherein x is a number sufficient to satisfy the valences of the metal elements in the catalyst.

4,363,749

WATER CLARIFICATION COAGULANT/ADSORBENT

Donald E. Weiss, Blackburn; Luis O. Kolarik, Forest Hill; Anthony J. Priestley, Elsternwick, and Nevil J. Anderson, Sandringham, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia

Division of Ser. No. 944,125, Sep. 19, 1978, Pat. No. 4,279,756, which is a continuation-in-part of Ser. No. 792,767, Apr. 28, 1977, abandoned. This application Feb. 4, 1981, Ser. No. 231,388

Claims priority, application Australia, May 3, 1976, PC5798; Mar. 25, 1977, PC9576; Sep. 22, 1977, PD1779

Int. Cl.³ B01J *20/12, 20/04*

U.S. Cl. 252—455 R **7 Claims**

1. A particulate coagulant/adsorbent suitable for removing

suspended impurities and coloured substances from water by coagulation which comprises a finely divided particulate mineral or clay material, the individual particles of which have a particle size of 10 microns or less and have been treated to produce a thin hydroxylated surface layer derived from the substance of the particulate mineral or clay material and having a positive zeta potential at the adsorption pH (as hereinbefore defined).

2. A coagulant/adsorbent as claimed in claim 1, wherein the particulate mineral or clay material is an oxide or silicate.

5. A method for preparing the coagulant/adsorbent claimed in claim 1, which consists essentially of suspending the particulate mineral or clay material in an alkali solution for a period sufficient to form the hydroxylated layer.

4,363,750

CATALYST FOR DEHYDROGENATION OF OXYGEN CONTAINING DERIVATIVES OF THE CYCLOHEXANE SERIES INTO CORRESPONDING CYCLIC KETONES AND/OR PHENOLS

Alexandr Y. Rozovsky, Rublevskoe shosse, 97, korpus 3, kv. 25; Valentin D. Stytsenko, ulitsa Musy Dzhalilya, 34, korpus 2, kv. 18; Svetlana A. Nizova, ulitsa Volgina, 27, kv. 144; Petr S. Belov, ulitsa Vavilova, 52, korpus 3, kv. 163, and Alexandr J. Dyakonov, ulitsa Begovaya, 32, kv. 71, all of Moscow, U.S.S.R.

Filed Jan. 7, 1981, Ser. No. 223,073

Int. Cl.³ B01J *23/82, 23/78*

U.S. Cl. 252—459 **3 Claims**

1. A catalyst comprising by weight:

nickel 15 to 55%

promotor selected from the group consisting of germanium, lead and mixtures thereof:

	0.2 to 8.0%
inert carrier	84.8 to 37.0%

the atomic ratio of nickel to the promoter being from 15:1 to 410:1.

2. A catalyst according to claim 1 further comprising a salt of a metal selected from alkali metals and alkaline earth metals and a mineral acid in an amount of from 0.01 to 1.0% by weight.

3. A catalyst according to claim 2 wherein said alkaline earth metal salt is a calcium or barium salt.

4,363,751

CATALYST FOR THE PREPARATION OF 4-CYANOTHIAZOLE AND PROCESS FOR PREPARING THE CATALYST

Stuart Bacher, Old Bridge; Carlos B. Rosas, Rahway, and John J. Sharkey, North Brunswick, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 174,956, Aug. 4, 1980, abandoned. This application May 20, 1981, Ser. No. 262,984

Int. Cl.³ B01J *23/14, 23/26, 23/28, 23/34*

U.S. Cl. 252—469 **17 Claims**

1. An ammoxidation catalyst which consists of manganese, chromium and molybdenum oxides in the molecular ratios of: $Mn_aCr_bMo_{1.00}O_x$ wherein a and b are from 0.02 to 15 provided the sum of a and b is not less than 0.8 and x is a number which satisfies the valences of the metallic elements.

4,363,752

CATALYST OF ACTIVATED COPPER-ZINC ALLOY AND ITS USE IN HYDRATING ACRYLONITRILE

Louis A. Goretta, Nappervills, and Frederick J. Sibert, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 8, 1981, Ser. No. 271,285

Int. Cl.³ B01J *23/06, 23/72;* **C07C** *102/08*

U.S. Cl. 252—475 **37 Claims**

1. A process for preparing a catalyst suitable for catalytically hydrolyzing acrylonitrile to acrylamide comprising contacting aqueous alkali metal hydroxide with an alloy comprised on a 100 weight percent total alloy weight basis of about 30 weight percent copper and about 70 weight percent zinc which is in the form of particles having a size ranging from about 0.0005 to 0.5 inches in average diameter for a time sufficient to remove from said alloy at least about 50 weight percent of the zinc initially present therein thereby to produce such catalyst.

4,363,753

MECHANICALLY STABLE SCREEN CLOTH CONSTRUCTION MADE OF METAL

Alfred Bozon, Erlensee; Edgar Koberstein, Alzenau; Hans-Dieter Pletka, Freigericht, and Herbert Voelker, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 17, 1980, Ser. No. 187,871

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937757

Int. Cl.³ B01J *35/02*

U.S. Cl. 252—477 R **11 Claims**

1. A mechanically stable screen cloth construction made of metal comprising at least one layer of corrugated or folded screen cloth and at least one planar closed or perforated cover layer, and a U-shaped border element fitted to the profile edge of and positioned over said corrugated or folded layer on two of its opposite edges which edges are perpendicular in relation to the axis of corrugation or folding, said screen cloth layer and said cover layer being arranged in alternate layers.

4,363,754

4(5)-ACETYL-9,9-DIMETHYLTRICYCLO-[4,4,0,$1^{8,10}$]-UNDEC-1-ENE, ITS PREPARATION AND USE IN PERFUMERY COMPOSITIONS AND AS AN ODORANT

Jens Conrad, Hilden; Klaus Bruns, Krefeld-Traar, and Horst Upadek, Erkrath, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Division of Ser. No. 178,083, Aug. 14, 1980, Pat. No. 4,322,559. This application Nov. 2, 1981, Ser. No. 317,017

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935547

Int. Cl.³ A61K *7/00*

U.S. Cl. 252—522 R **3 Claims**

1. A perfumery composition consisting essentially of from 1% to 50% by weight of the isomeric mixture 4(5)-acetyl-9,9-dimethyltricyclo-[4,4,0,$1^{8,10}$]-undec-1-ene and the remainder customary constituents of perfumery compositions.

4,363,755

LIQUID ALPHA-OLEFIN SULFONATE SHAMPOO COMPOSITION WITH INCREASED LOW TEMPERATURE STABILITY

Noriyuki Uchino, and Toru Ono, both of Tokyo, Japan, assignors to The Lion Corporation, Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 251,123

Claims priority, application Japan, Apr. 15, 1980, 55/49460

Int. Cl.³ C11D *1/84, 1/34*

U.S. Cl. 252—545 **7 Claims**

1. A liquid shampoo composition comprising:

(a) an anionic surface active agent (I) represented by the general formula:

OS—M

(wherein OS is an acid residue or a straight-chained olefin sulfonate having an average carbon number of 10 to 16, and M is an alkali- or alkaline earth metal)

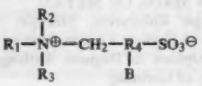
in an amount of 3 to 30% by weight of the composition weight; said anionic surface active agent comprising alkenyl sulfonate, hydroxyalkane sulfonate and alkenyl disulfonate, said hydroxyalkane sulfonate containing dihydroxyalkane sulfonate;

(b) at least one member selected from the group consisting of an anionic surface active agent (II) represented by the general formula:

PS—M

(wherein PS is an acid residue of a branched alkyl sulfonate having an average carbon number of 10 to 18, and M is an alkali- or alkaline earth metal)

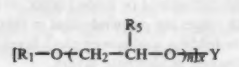
and an ampholytic surface active agent represented by the general formula:



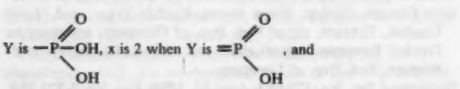
(wherein R_1 is a straight-chained or branched alkyl radical having an average carbon number of 10 to 18, both R_2 and R_3 are independent alkyl radicals with a carbon number of 1 to 3, R_4 is an alkylene radical having a carbon number of 1 to 3, and B is H or OH radical)

in an amount of 1 to 15% by weight of the composition weight; and

(c) a phosphoric ester represented by the general formula:



(wherein R_1 is a straight-chained or branched alkyl radical having an average carbon number of 10 to 18; R_5 is H or an alkyl radical having a carbon number of 1 or 2; n is an integer of 5 to 15; and x is 1 when



x is 3 when Y is

in an amount of 0.3 to 7% by weight of the composition weight.

4,363,756

PRETREATMENT COMPOSITION FOR STAIN REMOVAL

Ralph R. Sepulveda, Suffern, N.Y., and Lynn H. Lander, Harrington Pk., N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 49,774, Jun. 18, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,336

Int. Cl.³ C11D *1/14, 1/83, 3/43, 3/46*

U.S. Cl. 252—550 **1 Claim**

1. An active composition for the pre-laundering treatment of stains on fabrics comprising isopropyl myristate present at a level of about 25%; a C_{11}–C_{15} secondary alcohol with about 5 ethylene oxide units per molecule present at a level of about 25%; and a sodium C_{10} linear alcohol sulfate present at a level of about 50%.

4,363,757

METHOD FOR NONCONTAMINATING SOLIDIFICATION FOR FINAL STORAGE OF AQUEOUS, RADIOACTIVE WASTE LIQUIDS

Rainer Köster, Karlsruhe; Günter Rudolph, Weingarten; Rainer Gebauer, Bellheim; Iris Boch, Bretten; Wilfried Schröter, Karlsruhe, and Jürgen Jakobs, Bruchsal, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,690

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819086

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **9 Claims**

1. Method for solidifying medium radioactivity aqueous waste liquids, low radioactivity aqueous waste liquids, and tritium containing aqueous waste liquids for final non-contaminating storage wherein the waste liquids are mixed with absorbing agents and/or with hardening agents and the radionuclides contained in the waste liquids are incorporated in a first solidifying matrix produced with the aid of these agents, and said first matrix is encased within at least one hardening matrix free of waste radionuclides without creating any interstices, comprising the steps of:

(a) granulating or pelletizing the aqueous, radioactive waste liquid solely by the single step of spraying said aqueous radioactive waste liquid onto a mixture of an absorbing, natural bentonite and a hydraulic binder, which mixture is being transported on a rotating pelletizing plate, so as to form said granules or pellets, the weight ratio of bentonite to hydraulic binder in the mixture being between 1:15 and 1:2;

(b) (1) embedding for final solidification said granules or pellets, wherein radionuclides from radioactive aqueous liquids are incorporated therein, in a binder which is initially present in a liquid state and later hardens, said binder being selected from the group consisting of polymerizable liquids which polymerize by condensation polymerization or addition polymerization and aqueous suspensions of hydraulic binders, or (2) cladding granules or pellets formed from radioactive aqueous waste liquids for final solidification with a first binder initially present in a liquid state and which later hardens, said first binder being selected from the group consisting of polymerizable liquids which polymerize by condensation polymerization, or addition polymerization and aqueous suspensions of hydraulic binders; and

(c) embedding for final solidification said clad granules or clad pellets in a second binder initially present in a liquid state and which later hardens, said second binder being selected from the group consisting of polymerizable liquids which polymerize by condensation polymerization or addition polymerization and aqueous suspensions of hydraulic binders.

4,363,758

CYTOTOXIC PROTEIN HYBRID AND PROCESS FOR THE PREPARATION THEREOF

Yasuhiko Masuho; Kazuo Kishida, both of Hino, and Takeshi Hara, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,347

Claims priority, application Japan, Dec. 22, 1980, 55-180552

Int. Cl.³ A61K *39/44*; C07G *7/00*

U.S. Cl. 260—112 B **7 Claims**

1. A cytotoxic protein hybrid prepared by covalently bonding an immunoglobulin, or its fragment, which is capable of bonding selectively to an antigen specific to a cell to be killed,

to a protein which is obtained from *Phytolacca americana* and capable of inhibiting protein synthesis.

4,363,759

CHEMILUMINESCENT-LABELED HAPTENS AND ANTIGENS

Robert C. Boguslaski; Robert J. Carrico, both of Elkhart, Ind., and James E. Christner, Birmingham, Ala., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 894,836, Apr. 10, 1978, which is a continuation of Ser. No. 667,996, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,622

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.7 **3 Claims**

1. An insulin-chemiluminescent substance conjugate having luminescent activity measurable by photosensitive means.

4,363,760

PARTIALLY HYDROLYZED ELASTIN FROM LIMED HIDE TRIMMINGS

Gheorghe Cioca, Coatesville, Pa., assignor to Seton Company, Newark, N.J.

Filed Aug. 27, 1981, Ser. No. 296,985

Int. Cl.[3] **A23J** *1/10;* **C07G** *7/06;* **C08L** *89/06, 89/04*

U.S. Cl. 260—123.7 **12 Claims**

1. A method of preparing soluble partially hydrolyzed elastin comprising:

treating insoluble elastin with ammonium persulfate;

partially hydrolyzing the elastin; and

recovering substantially pure soluble partially hydrolyzed elastin.

4,363,761

MONOAZO DYES CONTAINING AT LEAST ONE SULFO GROUP AND AT LEAST TWO BASIC OR CATIONIC GROUPS

Reinhard Pedrazzi, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

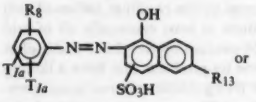
Division of Ser. No. 31,781, Apr. 20, 1979, Pat. No. 4,273,707. This application Dec. 4, 1980, Ser. No. 212,828

Claims priority, application Switzerland, Apr. 26, 1978, 4500/78; Apr. 26, 1978, 4501/78

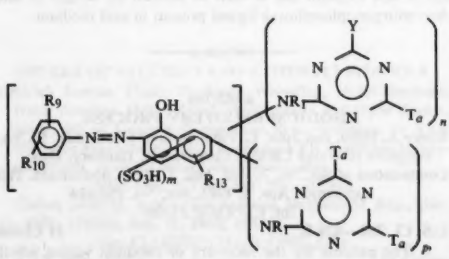
Int. Cl.[3] **C09B** *35/08, 35/22*

U.S. Cl. 260—153 **33 Claims**

1. A compound of the formula



or



or an external salt thereof,

wherein each R_1 is independently hydrogen or $C_{1\text{-}4}$alkyl,

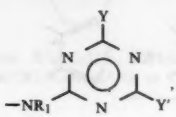
R_8 is hydrogen, $C_{1\text{-}4}$alkyl, $C_{1\text{-}4}$alkoxy, halo, $C_{1\text{-}4}$alkylamino, di-($C_{1\text{-}4}$alkyl)amino, $—SO_2NR_1R_1$ or $—CONR_1R_1$, wherein each R_1 is independently hydrogen or $C_{1\text{-}4}$alkyl,

R_9 is hydrogen, halo, $C_{1\text{-}4}$alkyl, $C_{1\text{-}4}$alkoxy, phenoxy, $—NHCOR_{14}$, $—SO_2R_{14}$, $—SO_2NR_1R_1$ or $—CONR_1R_1$, wherein each R_1 is independently hydrogen or $C_{1\text{-}4}$alkyl, and

R_{14} is $C_{1\text{-}4}$alkyl or phenyl,

R_{10} is hydrogen, halo, $C_{1\text{-}4}$alkyl or $C_{1\text{-}4}$alkoxy,

R_{13} is hydrogen; amino; ($C_{1\text{-}4}$alkyl)carbonylamino; benzamido; substituted benzamido having, on the phenyl ring, 1 or 2 substituents selected from halo, nitro, amino, $C_{1\text{-}4}$alkyl and $C_{1\text{-}4}$alkoxy; or



wherein R_1 is hydrogen or $C_{1\text{-}4}$alkyl,

Y is chloro, hydroxy, amino or an amino group having at least one aliphatic, cycloaliphatic or aromatic substituent, and

Y′ is hydroxy, amino or an amino group having at least one aliphatic, cycloaliphatic or aromatic substituent,

each T_a is independently $-NR_2'$-Q-$NR_3'R_4'$ or $-NR_2'$-Q-$N^{\oplus}R_5'R_6'R_7'$, wherein R_2' is hydrogen or methyl,

each of R_3' and R_4' is independently hydrogen, $C_{1\text{-}6}$alkyl, n-$C_{2\text{-}3}$-hydroxyalkyl or benzyl,

each of R_5' and R_6' is independently $C_{1\text{-}6}$alkyl, n-$C_{2\text{-}3}$hydroxyalkyl or benzyl or

R_3' and R_4' or R_5' and R_6' taken together and with the nitrogen atom to which they are joined form a pyrrolidine, piperidine or morpholine ring,

R_7' is methyl, ethyl or benzyl, and

Q is linear or branched $C_{2\text{-}6}$alkylene,

each T_{la} is independently $—CO—T_a$ or $—SO_2—T_a$, wherein T_a is as defined above,

each Y is independently chloro, hydroxy, amino or an amino group having at least one aliphatic, cycloaliphatic or aromatic substituent,

m is 1 or 2,

n is 0, 1, 2, 3 or 4, and

p is 0, 1, 2 or 3,

with the proviso that $n+2p \cong m+1$,

with the provisos that (i) each basic group is independently in free base, internal salt or acid addition salt form, (ii) the positive charge of each cationic group is independently balanced by the negative charge of a $—SO_3^{\ominus}$ group of the molecule or an external non-chromophoric anion, and (iii) the number of basic groups in internal salt form and cationic groups the positive charge of which is balanced by the negative charge of a $—SO_3^{\ominus}$ group of the molecule does not exceed the number of sulfo groups present in the molecule.

4,363,762

PROCESS FOR PREPARING IMIDAZODIAZEPINES

Max Gerecke; Willy Haefely, both of Reinach; Walter Hunkeler, Magden; Emilio Kyburz, Reinach; Hanns Möhler, Inzlingen; Lorenzo Pieri, Riehen, and Petar Polc, Binningen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

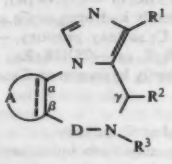
Division of Ser. No. 193,775, Oct. 3, 1980, Pat. No. 4,316,839. This application Nov. 16, 1981, Ser. No. 322,091

Claims priority, application Switzerland, Oct. 4, 1979, 8971/79; Oct. 4, 1979, 8972/79; Nov. 30, 1979, 10664/79; Nov. 30, 1979, 10665/79; Jul. 25, 1980, 5716/80

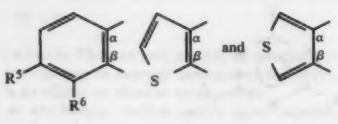
Int. Cl.[3] **C07D** *487/04, 487/14, 513/14*

U.S. Cl. 260—239.3 T **1 Claim**

1. A process for the manufacture of compounds of the formula:

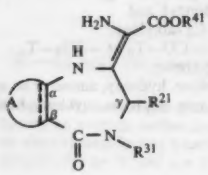


wherein A together with the two carbon atoms denoted as α and β is selected from the group consisting of:



(a) (b) (c)

the dotted line represents the double bond present in group (a) and (b), D is C=O or C=S, R^1 is selected from the group consisting of cyano, lower alkanoyl and a group of the formula —$COOR^4$, R^4 is selected from the group consisting of methyl, ethyl, isopropyl and 2-hydroxyethyl, R^5 is selected from the group consisting of hydrogen, trifluoromethyl and halogen and R^6 is selected from the group consisting of hydrogen, trifluoromethyl, halogen and lower alkyl and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are trimethylene or propenylene and the carbon atom denoted as γ has the S- or R,S-configuration, which comprises treating a compound of the formula:



wherein A and the dotted line are as above, R^{21} is hydrogen, R^{31} is lower alkyl and R^{41} is methyl, ethyl or isopropyl with a formylating agent.

4,363,763

POLYOL ESTERS OF ALPHA-HYDROXY CARBOXYLIC ACIDS

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 124,192, Feb. 25, 1980, abandoned. This application Dec. 24, 1980, Ser. No. 219,718

Int. Cl.³ C09F *5/08*; C11C *3/02*

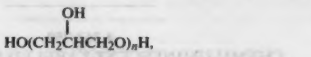
U.S. Cl. 260—410.7 **11 Claims**

1. A polyol monoester of an alpha-hydroxy carboxylic acid of the formula

wherein R is a hydrocarbyl group containing from about 6 to about 20 carbon atoms and the polyol is selected from the group consisting of:

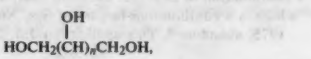
(a) glycols containing from 1 to about 20 C_2–C_3 alkylene oxide units and mixtures thereof;

(b) glycerols of the formula



wherein n is from 1 to 10, and isomers thereof, provided that R is an alkyl group containing about 10 carbon atoms when n is 1;

(c) polyols of the formula



wherein n is from 2 to 4;

(d) pentaerythritol and dipentaerythritol;

(e) inositol; and

(f) monosaccharides and disaccharides containing 5 or 6 carbon atoms per saccharide unit.

4,363,764

PREPARATION OF RHODIUM COMPLEX COMPOUNDS

Ernst Billig, Charleston; David R. Bryant, South Charleston, and Jackie D. Jamerson, Charleston, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 30, 1980, Ser. No. 221,502

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **20 Claims**

1. An organic one-phase process for preparing a halocarbonylbis(triorganophosphorus) rhodium compound which comprises reacting, at a temperature from about 20° C. to about 200° C., an essentially non-aqueous homogeneous organic reaction solution consisting essentially of (a) a rhodium complex concentrate, (b) a halide ion source, (c) carbon monoxide gas or a carbon monoxide source and (d) free triorganophosphorus ligand, for at least a sufficient period of time to form said halocarbonylbis(triorganophosphorus) rhodium compound; said rhodium complex concentrate consisting essentially of from about 0.1 to about 30 percent by weight of a spent hydroformylation reaction medium and having been produced by concentrating a spent hydroformylation reaction medium that contains a partially deactivated soluble rhodium complex hydroformylation catalyst, aldehyde products, higher boiling aldehyde condensation by-products, and free triorganophosphorus ligand, so as to remove from said medium, while retaining a major amount of the rhodium values of said catalyst present in said medium, at least essentially all of said aldehyde products, at least 50 percent by weight of said higher boiling aldehyde condensation by-products that have a boiling point below that of said free triorganophosphorus ligand present in said medium at least 50 percent by weight of said free triorganophosphorus ligand present in said medium.

4,363,765

RHODIUM RECOVERY PROCESS

Rocco A. Fiato, and Jose' L. Vidal, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 70,003, Aug. 27, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,614

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **21 Claims**

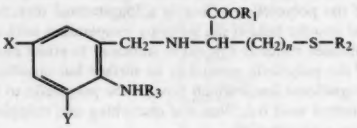
1. The process for the recovery of rhodium values which comprises contacting a rhodium complex with a crown ether, an alkaline cesium salt and water in a liquid phase such that a rhodium-containing solid is formed.

4,363,766
PROCESS FOR THE PREPARATION OF SULFUR-CONTAINING N-BENZYL-AMINO ACIDS AND ESTERS

Bernard Bellegarde, Gradignan, France, assignor to Boehringer Ingelheim GmbH, Ingelheim, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,851
Claims priority, application France, Apr. 20, 1978, 78 11735
Int. Cl.³ C07C *149/43, 153/09*
U.S. Cl. 260—455 R **9 Claims**

1. A process for the preparation of a compound of the formula



wherein

X and Y, which may be identical to or different from each other, are each hydrogen or halogen;

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen, alkyl of 1 to 3 carbon atoms, carboxy-lower alkyl or lower aliphatic acyl;

R_3 is hydrogen or lower aliphatic acyl; and

n is 1 or 2;

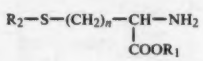
which comprises the steps of

(A) converting anthranilic acid or a halogenated anthranilic acid into the corresponding aldehyde by

(a) reacting the optionally halogenated anthranilic acid with thionyl chloride to form the corresponding anthranilic acid chloride, reacting the acid chloride with a secondary amine to form the corresponding tertiary amide, and reducing the tertiary amide; or

(b) reducing the optionally halogenated anthranilic acid to form the corresponding alcohol, and oxidizing the said alcohol with a metal oxide;

(B) reacting the aldehyde with a racemic or optically active compound of the formula



wherein R_1, R_2 and n have the meanings previously defined, to form the corresponding Schiff's base;

(C) reducing the said Schiff's base; and

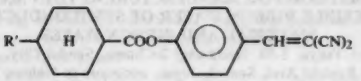
(D) recovering the reaction product.

4,363,767
ESTERS OF 4-[2,2-DICYANO-ETHENYL]-PHENOLS

Dietrich Demus, Halle; Wolfgang Weissflog, Halle-Neustadt; Horst Zaschke, Halle; Rudolf Wolff, Halle, and Horst Kresse, Halle, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik Berlin im VEB Kombinat Mikroelektronik, Berlin, German Democratic Rep.

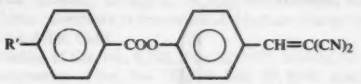
Filed Oct. 3, 1980, Ser. No. 202,958
Claims priority, application German Democratic Rep., Jan. 11, 1980, 218410; Jan. 11, 1980, 218411
Int. Cl.³ C07C *121/70*; C09K *3/34*
U.S. Cl. 260—463 **12 Claims**

1. An ester of a 4-(2,2-dicyano-ethenyl)phenol of the formula



wherein $R^1 = C_2H_5$ or C_6H_{13}.

2. An ester of a 4-(2,2-dicyano-ethenyl)phenol of the formula

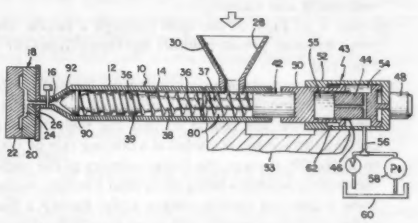


wherein $R^1 = C_6H_{13}$, C_4H_9O, $C_5H_{11}O$, $C_6H_{13}O$, $C_9H_{19}O$, C_4H_9COO, $C_6H_{13}COO$, or $C_6H_{13}OCOO$.

4,363,768
METHOD OF INJECTION MOLDING EMPLOYING MULTICHANNEL WAVE SCREW

George A. Kruder, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 25,884, Apr. 2, 1979, Pat. No. 4,285,600, which is a continuation-in-part of Ser. No. 917,204, Jun. 20, 1978, Pat. No. 4,173,417, which is a continuation-in-part of Ser. No. 788,028, Apr. 15, 1977, abandoned. This application Feb. 13, 1981, Ser. No. 234,397
The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.
Int. Cl.³ B29F *1/02*
U.S. Cl. 264—68 **3 Claims**



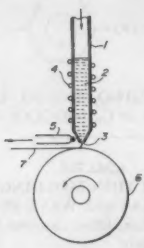
1. A method of injection molding wherein a quantity of synthetic resinous material is prepared for injection into a mold without overheating and with good melt quality, comprising processing resinous material in a feed and transition zone to melt a substantial portion of the material and advance it to a second zone, dividing the flow through said second zone into two parallel channels each of which has restricted cross-sectional areas at a plurality of locations along its length with the restricted areas in one channel being longitudinally offset from the restricted areas in the other channel and with the cross-sectional area of each channel varying cyclically over a plurality of substantially identical cycles, forcing most of the incompletely melted resinous material in each of said channels to pass through said restricted areas in that channel to receive extra energy input for melting the same thoroughly, and filtering a portion of the completely molten resinous material from one channel to the other with minimum energy input just in advance of each of said restricted areas to avoid the extra energy input associated with passage through said restricted areas and thereby to avoid overheating of the melted material, said cycles reinforcing one another and collectively providing a steady material flow rate and pressure at an output end of said second zone, and injecting a charge of the completely molten resinous material at the discharge end of said second zone into a mold cavity.

4,363,769

METHOD FOR MANUFACTURING THIN AND FLEXIBLE RIBBON WAFER OF SEMICONDUCTOR MATERIAL AND RIBBON WAFER

Noboru Tsuya, 1-38, Kashiwagi 2-Chome, Sendai City, Japan, and Kenichi Arai, Sendai, Japan, assignors to Noboru Tsuya, Sendai, Japan

Continuation of Ser. No. 961,047, Nov. 15, 1978, abandoned. This application Jan. 15, 1981, Ser. No. 225,242
Claims priority, application Japan, Nov. 23, 1977, 52-140103
Int. Cl.³ B29D 7/02
U.S. Cl. 264—85 25 Claims



1. A method for manufacturing a thin and flexible ribbon wafer of semiconductor material comprising:

heating a raw semiconductor material consisting essentially of a material selected from the group consisting of Ge, Si, Se, Te, InSb, ZnTe, PbSe, InAs, InP, GaSb, PbTe, ZnS, Bi_2Te_3 at a temperature within the range from a melting point of the raw semiconductor material to 300° C. above the melting point to form a uniform melt having a suitable wettability and viscosity;

ejecting a jet flow of the melt through a nozzle under a predetermined pressure within the range from 0.01 to 1.5 atm.; and

substantially instantaneously cooling the ejected jet flow of the melt by moving a cooling surface of a moving cooling substrate past the nozzle so that the melt contacts the cooling surface and is cooled at a cooling rate of 1,000° C. to 1,000,000° C./sec., the linear velocity of the surface of the cooling substrate being more than 5 m/sec., to thereby form a thin and flexible ribbon wafer having a fine and compact grain structure with more than 50% of the grains having diameter within the range from 1 to 100 μm without existing ordered lattice, said ribbon wafer having a thickness of from 5 to 200 μm.

4,363,770

MOLDED SHELLS FOR LUGGAGE AND THE LIKE

Gary Philips, Youngstown, Ohio, assignor to Airway Industries, Inc., Ellwood City, Pa.

Division of Ser. No. 196,021, Oct. 10, 1980. This application Apr. 9, 1981, Ser. No. 252,320
Int. Cl.³ B28B 1/26
U.S. Cl. 264—87 3 Claims

1. The method of manufacturing a shell for luggage and the like comprising blending glass beads and resin with fibrous wood products and water to form a slurry, vacuum forming the slurry to the configuration of a shell and then molding the same by application of heat and pressure.

4,363,771

PROCESS FOR PREPARING NON-ORIENTED POLYOLEFIN FILM

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 108,924, Dec. 31, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,779
Int. Cl.³ D04N 1/54
U.S. Cl. 264—119 2 Claims

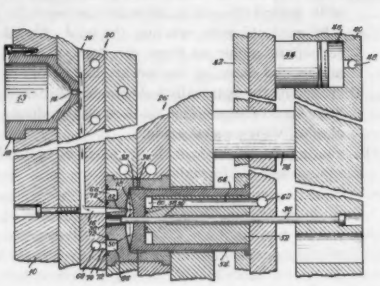
1. A method for producing a non-oriented film that comprises depositing high molecular weight polyolefin powder on a smooth non-adherent substrate, sintering said deposited powder at a sintering temperature just below the melting temperature of the polyolefin, rolling in a longitudinal direction the sintered powder held at the sintering temperature with at least one unheated roller at a pressure sufficient to effect densification of the polyolefin normal to its surface but insufficient to effect significant longitudinal flow of the polyolefin to form a non-oriented void free film, and quenching and stripping said film from said substrate.

4,363,772

METHOD AND APPARATUS FOR INJECTION MOLDING UTILIZING EXPANDABLE CAVITY

Daniel P. Hidding, Rte. 2, Ridgecroft La., Barrington, Ill. 60010

Filed Jul. 16, 1979, Ser. No. 57,808
Int. Cl.³ B29F 1/00
U.S. Cl. 264—328.7 1 Claim



1. In the method of injection molding a non-foaming thermoplastic resin into a finished item, which includes the steps of joining at least two cavity-defining parts of a mold together to form a mold cavity having a single opening through which molten thermoplastic material may flow, injecting resin into the cavity through said opening, and thereafter separating the two parts of the mold and removing the finished item therefrom, the improvement which comprises the steps of:

a. providing a movable wall for at least one of the parts of the mold to permit decreasing the size of the cavity and to permit positioning of the wall portion for impingement thereagainst of resin as it is injected into the cavity;

b. constantly urging the movable wall portion in a direction to decrease the size of the cavity to smaller than that of the finished item with a force less than the force of injection molding the resin within the cavity, and

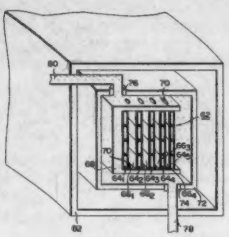
c. injecting resin into the cavity under molding pressure in a direction transverse to said wall portion to cause initial impingement against the movable wall portion, whereby as the cavity fills with resin the injection molding force of the resin will cause the movable wall to move in a direction opposite to the urging force and the cavity will be increased to the full size of the item being molded.

4,363,773

SUPERCONDUCTIVE ELECTROMAGNET APPARATUS

Susumu Mine, Zushi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 7, 1979, Ser. No. 92,033
Claims priority, application Japan, Nov. 13, 1978, 53-138860
Int. Cl.[3] G21B *1/00;* H01F *7/06*
U.S. Cl. 376—142 10 Claims



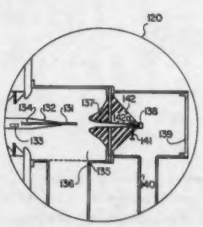
1. A superconductive electromagnet apparatus comprising:
a coil made of a conductor which is coiled around an axis to define a spiral channel having a width which is progressively narrower from an inner portion of said coil to an outer portion of said coil farther away from said axis than said inner coil portion and which has substantially the same cross section over the entire length; and
frame means for supporting said coil and having a plurality of holes communicating with said channel for allowing air bubbles to escape.

4,363,774

PRODUCTION AND UTILIZATION OF ION CLUSTER ACCELERATION

Willard H. Bennett, P.O. Box 5342, Raleigh, N.C. 27607

Continuation-in-part of Ser. No. 871,868, Jan. 24, 1978. This application May 14, 1980, Ser. No. 149,613
Int. Cl.[3] G21B *1/00;* H01J *29/46*
U.S. Cl. 376—105 26 Claims



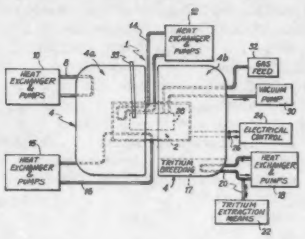
1. The method of concentrating a beam on a target comprising:
directing a high-energy pulsed beam comprising bursts of electrons, in a first direction, toward the target,
pinching said beam for a first portion of its length which portion is spaced from the target, said beam having a self-magnetic field, said pinching being effected by the self-magnetic field around the beam,
the improvement comprising:
further pinching the beam, over a second portion of its length which second portion extends from the first portion to the target, by limiting the size of the self-magnetic field around the beam to a smaller cross-section than the cross-section of the first-named field while increasing the atomic ion concentration in the beam so that the small-size cross-section of the self-magnetic field plus the increased ion concentration will cause the beam to be pinched to a smaller cross-section than resulted from the first pinching step,
forming clusters of ions in the beam, the concentration of ions in such clusters being increased during said further pinching step, and
impacting a target with said clusters of ions to produce a shower of particles.

4,363,775

CONTROLLED NUCLEAR FUSION APPARATUS

Robert W. Bussard, Arlington, Va., and Bruno Coppi, Winchester, Mass., assignors to International Nuclear Energy Systems Co., La Jolla, Calif.

Continuation of Ser. No. 5,104, Jan. 22, 1979, abandoned, which is a continuation of Ser. No. 755,794, Dec. 30, 1976, abandoned. This application Jun. 10, 1980, Ser. No. 158,228
Int. Cl.[3] G21B *1/00*
U.S. Cl. 376—133 28 Claims



1. A toroidal reactor for generating thermal energy from fusion reactions in an ionized plasma of fusible fuel comprising:
(a) fusion core unit comprising a plasma containment means having a major radius on the order of 50 cm for containing said fusible fuel, said plasma containment means forming a plasma containment region,
(b) said plasma containment means including a plurality of toroidal field coils adjacent to and surrounding said plasma containment region for generating a toroidal magnetic field,
(c) means for transporting a cooling fluid to said toroidal field coils,
(d) said toroidal field coils having fluid conducting portions for transporting said cooling fluid within regions of said toroidal field coils,
(e) power supply means connected to said toroidal field coils for generating a high toroidal magnetic field within the ionized plasma within said plasma containment region, said toroidal magnetic field being on the order of greater than 100 KG,
(f) said plurality of toroidal field coils comprising high-strength, non-superconducting conductors for sustaining said high field and thermal energies,
(g) ohmic heating means for inducing an ohmic heating plasma current in said plasma fuel within said plasma containment means, said ohmic heating current raising the temperature of said plasma, said ohmic heating means including transformer means and said ohmic heating current generating a poloidal magnetic field within said plasma,
(h) blanket means positioned completely outside of and substantially surrounding said toroidal field coils,
(i) means extending into said plasma containment means for delivering said fusible fuel therein,
(j) said fusion core unit being readily separable from said blanket means for permitting facile access to said fusion core unit to allow for replacement of said fusion core unit as required,
(k) blanket cooling fluid transport means connected to said

blanket means for transporting a cooling fluid to said blanket means,

(l) means connected to at least one of said blanket cooling fluid transport means and said toroidal field cooling transport means for extracting thermal energy therefrom,

(m) means for controlling the density of said plasma within said confinement means by adjusting the amount of fuel delivered into said confinement means,

(n) said ohmic heating means operable to induce said ohmic heating current to heat said plasma to a temperature of about 4 KeV while said means for controlling the density of said plasma is operable for increasing the density of said plasma for operating said reactor below a first fusion reaction rate and in which charged particle heating from said fusion reaction substantially equals bremsstrahlung losses,

(o) said density controlling means and said ohmic heating means operable for increasing the plasma density further while further heating said plasma to maintain the temperature of said plasma above the range of approximately 4 KeV, said plasma being heated by both said ohmic heating current and said charged particle heating,

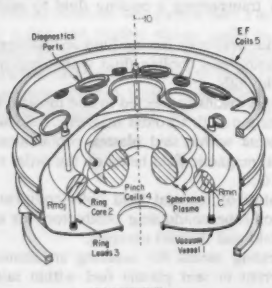
(p) said density controlling means operable for increasing the plasma density above said first fusion reaction rate, wherein said charged particle heating increases with increasing density for raising the temperature of said plasma above the temperature at which charged particle heating from said fusion reaction substantially equals bremsstrahlung losses, whereby said reactor generates thermal energy above plasma energy losses comprising bremsstrahlung losses, cyclotron radiation losses and particle conductivity losses.

4,363,776

METHOD AND APPARATUS FOR THE FORMATION OF A SPHEROMAK PLASMA

Masaaki Yamada, Lawrenceville; Harold P. Furth; Thomas H. Stix, both of Princeton, and Alan M. M. Todd, Princeton Junction, all of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1980, Ser. No. 173,555
Int. Cl.³ G21B 1/00
U.S. Cl. 376—137 **32 Claims**



THE SPHEROMAK DEVICE

1. An apparatus for producing and confining a spheromak plasma, comprising:

a generally spheroidal vacuum vessel having a major axis and an equatorial midplane;

equilibrium field coil means for producing an equilibrium magnetic field directed primarily along the major axis;

a ring core disposed within said vacuum vessel symmetrically with respect to said major axis and said equatorial midplane, and having a minor axis in said equatorial plane surrounding said major axis, a major radius and a minor radius, said ring core including a toroidal flux coil wound about said minor axis and a separate poloidal flux coil and being supported within said vacuum vessel by a plurality of ring supports, said ring supports housing conductors for supplying current to said poloidal and toroidal flux coils;

means for energizing said equilibrium field coils at a time t_1 to create a first poloidal magnetic field within said vacuum vessel;

means for energizing said poloidal flux coil at a time $t_2 > t_1$ to create a second poloidal magnetic field within said vacuum vessel, said first and second poloidal fields being superposed to form a composite poloidal field whose strength is greater on a radially exterior major radius side of said ring core, than on a radially interior major radius side of said ring core;

means for energizing said toroidal flux coil at a time $t_3 > t_1$ for initiating a plasma discharge within said vacuum vessel outside said toroidal flux coil, said ring core and said equilibrium field coils being operable to cause said plasma to become expanded and distended toward said major axis; and

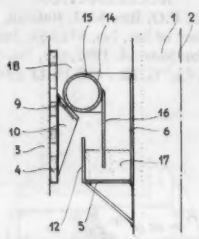
means for pinching off a portion of said distended plasma, whereby a detached spheromak plasma concentric with, and having a major radius less than the major radius of, said ring core is produced.

4,363,777

CLOSURE ELEMENT FOR LIMITING THE CONVECTION CURRENTS IN AN ANNULAR SPACE ABOUT A NUCLEAR REACTOR COMPONENT

Bernard Cornu, Les Clayes-sous-Bois, and Jean-Louis Pierrey, Bourg la Reine, both of France, assignors to Novatome, Le Plessis Robinson, France

Filed Nov. 3, 1980, Ser. No. 203,764
Claims priority, application France, Nov. 23, 1979, 79 28879
Int. Cl.³ G21C 13/00
U.S. Cl. 376—203 **2 Claims**



1. Closure apparatus to limit convection currents in an annular space (18) about a component (1) of a nuclear reactor cooled by a liquid metal, having a vessel closed by a very thick horizontal plate in which vertical cylindrical passages are provided for the passage of removable components disposed vertically in the reactor and resting on the plate, each of the components having between its outer surface and the inner surface of the passage an annular space (18) of a certain width in which is positioned the closure apparatus of the type having an annular cup (5) solid with the component (1) and surrounding its outer wall and containing a liquid into which a sleeve (16) dips so as to ensure closure of the annular space (18) about the component (1) characterised by the fact that it also has:

a frusto-conical support surface (9) having as axis the vertical axis common to the component and the passage fixed at the perimeter of its large base at the passage and having its small base disposed at a lower level than the level of the large base, of a diameter greater than the external diameter of the cup (5),

and a closure element (14) with rotational symmetry, not connected to the cup (5) and the support surface (9),

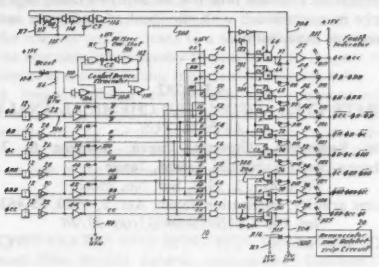
having an upper part (15) intended to come to rest on the support surface (9) so as to totally close the annular space (18) at the top when the component is put in position in the reactor, the cup (5) being then below the support surface (9) and a part directed downwards constituted by the sleeve (16) resting in the cup (5) when the component (1) is handled and ensuring closure of the annular space (18) at the bottom, when the reactor is in service, the cup (5) then filling up with liquid metal.

4,363,778

MONITOR CIRCUIT FOR A CONTROL ROD DRIVE MECHANISM

Robert L. Abbott, Richland, Wash., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed May 15, 1980, Ser. No. 149,966
Int. Cl.³ G21C *17/00, 7/08*
U.S. Cl. 376—228 **6 Claims**



1. In a nuclear reactor having a plurality of control rods distributed within the reactor core and a corresponding plurality of control rod drive mechanisms (CRDMs) for controlling the positioning of the control rods including six phase stepper motors having six symmetrically arranged stator phase windings and a polyphase power supply for sequentially energizing appropriate combinations of said stator phase windings to cause said motors to revolve in discrete radial increments; a monitor circuit for monitoring the phase sequencing of said power supply including:

digital circuit means responsive to the energization of the phase lines connected to said stator phase windings for detecting nine erroneous phase combinations indicative of a fault condition including the energization of any stator phase and its opposite stator phase and the energization of any stator phase and neither of its two adjacent stator phases, and trip circuit means responsive to said digital circuit means for producing a trip signal that is effective to de-energize said CRDMs only if said CRDMs are running when a fault condition is detected.

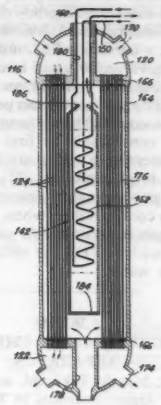
4,363,779

PRESSURIZED WATER REACTOR

Maurice Fajeau, Pertuis, France, assignor to Commissariat a l'Energie Atomique, France

Filed Sep. 15, 1980, Ser. No. 186,900
Claims priority, application France, Sep. 28, 1979, 79 24221
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—282 **9 Claims**

1. A nuclear reactor comprising a pressure enclosure, a reactor core contained in said enclosure, at least one primary circuit in which a primary fluid circulates, a secondary circuit in which a secondary fluid circulates, a steam generator through which said primary fluid transfers heat given off in said reactor core to said secondary fluid, said steam generator having a vertically axed cylindrical envelope and a group of tubes in which the primary fluid circulates, said envelope having a lower intake for entry of the secondary fluid in a liquid state and an upper outlet whereby said secondary fluid leaves the envelope in a gaseous state, a reserve tank positioned in said secondary circuit parallel and at the same time level as the steam generator, said reserve tank being permanently connected with the steam generator and containing a volume of said secondary fluid in the liquid state surmounted by a volume of said secondary fluid in the gaseous state, and a cooling



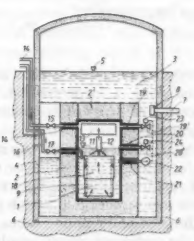
circuit incorporating a heat exchanger located within the reserve tank and below a minimum level of said secondary fluid in the liquid state, said cooling circuit being adapted for removing heat transmitted to the secondary fluid contained in the reserve tank via the steam generator in case of failure of the secondary circuit.

4,363,780

BOILING REACTOR

Kare Hannerz, Västeras, Sweden, assignor to AB Asea-Atom, Västeras, Sweden

Filed Dec. 15, 1980, Ser. No. 216,713
Claims priority, application Sweden, Dec. 17, 1979, 7910355
Int. Cl.³ G21C *15/18*
U.S. Cl. 376—282 **7 Claims**



1. Boiling water reactor comprising a reactor core (1) and a pressure vessel (2) surrounding said core and being provided with at least one conduit (14) for discharged steam and at least one conduit (16) for feed water and which, during normal operation, is filled with water up to a certain normal level (11), the steam pressure in the pressure vessel having a substantially constant value of at least 5 MPa, said pressure vessel being disposed with respect to a water reservoir (3) in such a way that a portion of the water-filled space of the reservoir positioned above the reactor core has a volume which is at least as large as the water volume present in the pressure vessel, characterised in that said pressure vessel is constructed as a substantially hollow-cylindrical body with a vertical axis and has an internal heat-insulating layer (9) and a metallic lining (10),

arranged radially inside said layer (9), that at least one upper emergency cooling pipe (19), which in said pressure vessel (2) opens out above said normal level (11) is passed through said lining, said layer and through the wall of the pressure vessel, and arranged to open out into said reservoir via a corresponding, normally closed, first emergency cooling valve (19'), whereas at least one lower emergency cooling pipe (20), opening out into the pressure vessel, is arranged to open out into said reservoir via a corresponding, normally closed, second emergency cooling valve (20'), said lower emergency cooling pipe (20) penetrating said lining below the zone where said lining is penetrated by said upper emergency cooling pipe (19), said first (19') and second (20') emergency cooling valves being each individually controllable by first (23) and second (24) control means, respectively, which are both responsive to the output signal of a level transducer (22), said level transducer being arranged to give a signal for opening of said first and said second emergency cooling valves when, in said pressure vessel (2), the water depth is at least 10% smaller than the water depth at said normal level (11), but sufficient for keeping said reactor core under water.

4,363,781

DISCRETE TYPE AUTOMATED CHEMICAL ANALYTIC APPARATUS

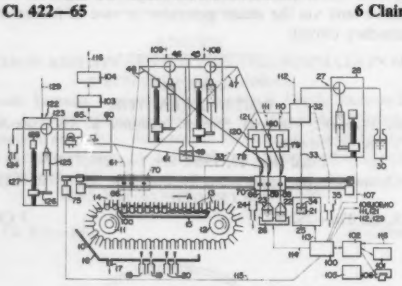
Akihiro Akamatsu; Masaki Takeuchi, and Kiyoshi Yamashita, all of Otawara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 24, 1981, Ser. No. 246,936

Claims priority, application Japan, Mar. 31, 1980, 55/41881; Apr. 15, 1980, 55/49866

Int. Cl.³ G01N *35/04, 35/06, 33/48*

U.S. Cl. 422—65 **6 Claims**



1. A discrete type automated chemical analytic apparatus for continuously analyzing a large number of specimens with respect to a plurality of items of examination in a single reaction channel comprising:

endless conveyor means having a top run;

drive means for moving the conveyor means;

a plurality of reaction tubes spatially mounted on the conveyor means in a direction in which said conveyor means is driven, those of said reaction tubes which are set on the top run of the conveyor means jointly defining a reaction line, the direction in which the reaction line travels being a time axis direction;

specimen-holding means;

reagent-holding means;

specimen discharge means for pipetting the specimen into a selected reaction tube on the reaction line from the specimen-holding means, said specimen discharge means including conduit means;

specimen conduit-positioning means for selectively moving the specimen discharge conduit means between a point facing the specimen-holding means at which the specimen is to be sucked and a fixed pipetting point at which the sucked specimen is to be dripped into the selected reaction tube on the reaction line;

reagent discharge means for pipetting a reagent into the selected reaction tube on the reaction line from the reagent-holding means, said reagent discharge means including conduit means;

measuring means providing at the terminal end of the reaction line for the analysis of said reacted speciment, said measuring means including intake conduit means adapted to remove said reacted specimen from said reaction tubes;

means for washing and drying the reaction tubes after removal of said specimen in order to render them ready for a subsequent application;

carrier means for supporting and moving the conduit means of the reagent discharge means from a point facing the reagent holding means to a point facing the selected reaction tube on the reaction line in the time axis direction;

carrier-driving means for reciprocating the carrier means along a path extending substantially in parallel with the reaction line; and

a driving mechanism for selectively moving the reagent-holding means crosswise of the reaction line,

whereby the reaction time can be adjusted freely and properly in accordance with the kind of specimen and the items of examination.

4,363,782

DISCRETE TYPE AUTOMATED CHEMICAL ANALYTIC APPARATUS

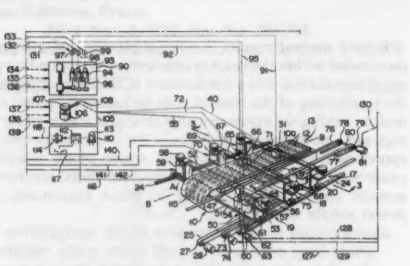
Kiyoshi Yamashita, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 2, 1981, Ser. No. 250,211

Claims priority, application Japan, Apr. 8, 1980, 55-46353

Int. Cl.³ G01N *35/04, 35/06, 33/48*

U.S. Cl. 422—65 **8 Claims**



1. A discrete type automated chemical analytic apparatus for continuously analyzing a large number of specimens with respect to a plurality of items of examination comprising:

conveyor means;

drive means for moving the conveyor mean in a longitudinal direction;

at least one row of a plurality of reaction tubes mounted on the conveyor means in its direction of movement and defining a reaction line, the direction in which the reaction line travels being a time axis direction;

specimen-holding means;

reaction-holding means;

specimen discharge means for pipetting a specimen from the specimen-holding means into a selected one of the reaction tubes arranged on the reaction line, said specimen discharge means including specimen nozzle means;

reagent-discharge means for pipetting a reagent from the reagent-holding means into the selected one of the reaction tubes arranged on the reaction line, said reaction discharge means including reagent nozzle means;

specimen nozzle-driving means for moving the specimen nozzle means from a point at which the specimen nozzle means faces the specimen-holding means to a point facing the selected one of a reaction tubes on the reaction line;

reagent nozzle-driving means for moving the reagent nozzle means from a point at which the reagent nozzle means

faces the reagent-holding means to a point facing the selected one of the reaction tubes on the reaction line;
measuring means provided at the terminal end of the reaction line for the analysis of said reacted specimen;
means for washing and drying the reaction tubes in order to render them ready for a subsequent application;
specimen nozzle carrier means for supporting the specimen nozzle means for vertical movement;
said specimen nozzle driving means including first means for moving the specimen nozzle means to a selected point lengthwise of the reaction line in the time axis direction and second means supported by the first means to move the specimen nozzle means to a selected point crosswise of the reaction line whereby to position said specimen nozzle means at a point facing the selected reaction tube;
reagent nozzle carrier means for supporting the reagent nozzle means for vertical movement;
said reagent nozzle-driving means including first means for moving the reagent nozzle means to a selected point lengthwise of the reaction line in the time axis direction, and second means supported by the first means to move the reagent nozzle means to a selected point crosswise of the reaction line whereby to position said reagent nozzle means at a point facing the selected reaction tube;
said reagent-holding means and said specimen-holding means being supported by the first means of the reagent nozzle-driving means and the specimen nozzle-driving means, respectively, to be moved lengthwise of the reaction line in the time axis direction.

4,363,783

APPARATUS FOR SPECIMEN TREATMENT

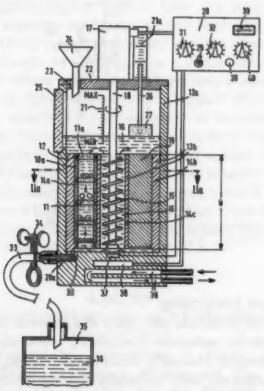
Helmuth Sitte, Seefeld, Austria, assignor to C. Reichert Optische Werke, AG, Vienna, Austria

Filed Oct. 30, 1981, Ser. No. 316,604

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042578

Int. Cl.[3] **F04C** *2/00*

U.S. Cl. 422—68 **10 Claims**



1. In apparatus for fixation, dessication, and embedding of biologic specimens for microscopic, especially electron microscopic studies, having a compartment for treating specimens held in liquid permeable specimen holders, a supply of treatment liquid, means connecting the supply to said compartment, and means to introduce liquid from the supply, and remove liquid from the compartment, the improvement comprising a chamber (**14***c*) in said compartment for holding a quantity of fluid, a passage connected to said chamber, pump means (**15**) located in said chamber for moving fluid through said passage, at least one tubular cell (**14***a*) for supporting a plurality of specimen holders (**10**, **10***a*) in an end to end relationship, one end of said cell being connected to said passage, the other end of each of said chamber and said cell being connected to a common portion of said tank to permit liquid to be circulated by said pump means.

4,363,784

APPARATUS FOR CONTINUOUSLY PRODUCING WATER-SOLUBLE HYDROXYALKYL CELLULOSE AND RELATED ETHERS

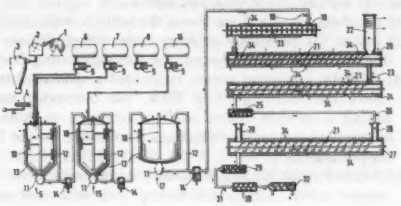
Josef Hilbig, Taunusstein; Arno Holst, Wiesbaden; Hans Künkler, Wiesbaden; Klaus Stölting, Wiesbaden, and Wolfgang Schminke, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Wiesbaden-Biebrich, Fed. Rep. of Germany

Division of Ser. No. 156,404, Jun. 4, 1980, Pat. No. 4,310,663. This application Apr. 27, 1981, Ser. No. 257,552

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924330

Int. Cl.[3] **B01J** *19/18, 19/20;* **C08G** *59/68;* **C08B** *11/08*

U.S. Cl. 422—134 **5 Claims**



1. Apparatus for continuous production of hydroxyalkyl cellulose and mixed ethers thereof, said apparatus comprising in combination:

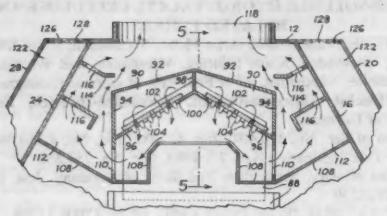
(a) means comprising a stirred kettle for alkalizing cellulose under atmospheric pressure;
(b) means for partially etherifying a slurry of alkalized cellulose, said partial etherifying means comprising at least one stirred autoclave, the first said autoclave being connected to the outlet of said alkalizing means such that alkalized cellulose may flow continuously from said alkalizing means into said first autoclave;
(c) means for homogenizing a slurry in said stirred kettle and in each said stirred autoclave, said homogenizing means comprising a homogenizing pump at the outlet of said stirred kettle and a homogenizing pump at the outlet of each said stirred autoclave;
(d) means for circulating slurry from said kettle in a loop and for circulating slurry from each of said autoclaves in a loop, said circulating means comprising a bypass leading from the bottom of said kettle to the upper end thereof and a bypass leading from the bottom of each said autoclave to the upper end of the same autoclave;
(e) a tubular reactor for completing the etherification of partially etherified slurry from the last said autoclave, said tubular reactor comprising a plurality of serially-connected, horizontal tubes, the first said tube being connected to the outlet of the last said autoclave such that partially etherified cellulose may flow continuously from said last autoclave into said first tube, the first tube of said tubular reactor being provided with a non-conveying homogenizing agitator, and each remaining tube being provided with a conveying agitator;
(f) means associated with said tubular reactor for adjusting the temperature of a slurry in said tubular reactor; and
(g) means for cooling a slurry withdrawn from said tubular reactor, said cooling means being connected to the outlet of the last tube of said tubular reactor such that etherified slurry from said tubular reactor may flow continuously from said tubular reactor to said cooling means.

4,363,785

WOOD STOVE HAVING CATALYTIC CONVERTER

Allan C. Willson, 1355 Suntree Ct., Salem, Oreg. 97302

Filed Jun. 25, 1981, Ser. No. 277,120
Int. Cl.[3] B01D *53/36;* B01J *15/00;* F24C *1/14, 14/00*
U.S. Cl. 422—173 11 Claims



1. A stove for burning solid fuel, comprising:
(a) top, bottom, front, rear and side walls,
(b) a fuel-supporting floor above the bottom wall,
(c) means for providing primary combustion air into the interior of the stove adjacent the fuel-supporting floor,
(d) catalytic converter means supported a spaced distance above the fuel-supporting floor, the converter means having a catalyst coated surface arranged to intercept incomplete combustion products from a fire on the fuel-supporting floor,
(e) means for introducing secondary combustion air to said catalyst coated surface for mixing with said combustion products, comprising an enclosed air chamber supported a spaced distance above the fuel-supporting floor, said catalyst coated surface forming at least a portion of an outside wall of said air chamber,
(f) a heat extraction chamber including the side and top walls of the stove arranged to receive the hot combustion gases passing from the catalytic converter and to transfer the heat from said gases to the side and top walls of the stove, and
(g) a combustion gas exhaust passageway means for communicating the heat extraction chamber with the atmosphere.

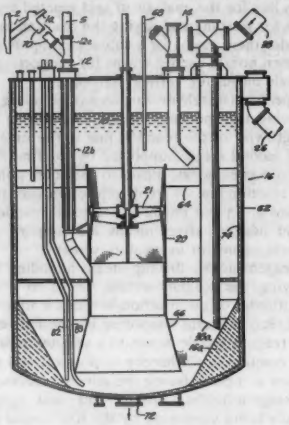
4,363,786

APPARATUS FOR REACTING A PARTICULATE SOLID AND A LIQUID

Allen S. Adams, Jasper, and Michael B. Caesar, Lake City, both of Fla., assignors to Occidental Chemical Corp., White Springs, Fla.

Continuation of Ser. No. 909,896, May 26, 1978, abandoned.
This application Sep. 22, 1980, Ser. No. 189,426
Int. Cl.[3] B01F *3/12;* B01J *8/10, 19/18, 19/26*
U.S. Cl. 422—189 18 Claims

1. Apparatus for reacting a particulate solid and a liquid, said apparatus comprising:
(a) vessel means for containing the particulate solid and the liquid;
(b) mixing means for circulating the particulate solid and the liquid within said vessel means, said mixing means including a draft tube disposed in a vertical position within said vessel means, and an agitator positioned within said draft tube, said draft tube having an outwardly flared lower skirt portion terminating in the bottom portion of said vessel means and said agitator including a propeller and a drive shaft connected therewith, said drive shaft being coaxially mounted within said vessel means and extending into said draft tube;
(c) inlet means for introducing the particulate solid and the liquid into said vessel means draft tube having an outwardly flared lower skirt portion terminating in the bottom portion of said vessel means; and,
(d) a source of gas and at least one gas injection means connected thereto for preventing appreciable settling of solids within the vessel means, said gas injection means



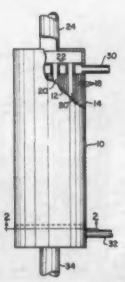
extending into said outwardly flared lower skirt portion of said draft tube.

4,363,787

MONOLITH HEAT EXCHANGE REACTOR

Heeyoung Yoon, McMurray, Pa., assignor to Conoco Inc., Stamford, Conn.

Filed Dec. 18, 1979, Ser. No. 104,987
Int. Cl.[3] F28D *7/00*
U.S. Cl. 422—201 2 Claims



1. A reactor comprising:
a monolithic substrate and fluid distribution means,
said monolithic substrate containing a plurality of substantially parallel channels completely through said monolithic substrate, said channels having catalytic surfaces, and a plurality of passageways completely through said monolithic substrate generally parallel to said channels, said passageways being adapted to pass a heat exchange fluid through said monolithic substrate, said passageways being larger in cross-section and fewer in number than said channels,
said distribution means comprising a plurality of passageway extensions parallel to said passageways and each said extension extending coaxially from a passageway and opening into a header chamber having a header chamber outlet, said header chamber outlet being in fluid flow communication with each of said passageways, said channels opening into a product chamber, said product chamber having a product outlet in fluid flow communication

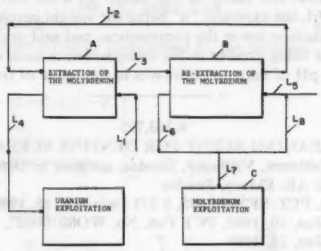
with each said channel, said channels having channel walls and said passageways having passageway walls, said channel walls being integral with said passageway walls, each said passageway extension being connected to one of said passageways, each said passageway wall being mutually supporting with at least one said channel wall, and each said channel wall being mutually supporting with at least one other channel wall.

4,363,788

SEPARATION OF URANIUM AND MOLYBDENUM USING A SOLVENT

Antoine Floreancig, St. Genis Laval, and Jean-Pierre Cuer, Francheville, both of France, assignors to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Mar. 13, 1980, Ser. No. 130,127
Claims priority, application France, Mar. 19, 1979, 79 07467
Int. Cl.[3] B01D *11/02*; C01G *39/00, 43/00, 56/00*
U.S. Cl. 423—9 17 Claims



1. A process for separating uranium and molybdenum contained in an aqueous liquor originating from the sulphuric acid treatment of uranomolybdeniferous ore characterizing contacting said aqueous liquor with at least one amine which is insoluble in an aqueous medium, selected from the group consisting of the tertiary and secondary amines dissolved in an aliphatic or aromatic hydrocarbon or a chlorinated hydrocarbon diluent, to obtain an organic phase and a aqueous phase separating the molybdenum-charged organic phase from the aqueous phase which is improverished in molybdenum and rich in uranium, contacting the molybdenum-charged organic phase with an aqueous solution containing at least one mineral agent selected from the group consisting of alkaline and ammonium hydroxides, carbonates and mixtures thereof to form an aqueous solution which is rich in molybdate from the regenerated organic amino solution wherein the amine/Mo molar ratio is in the range from about 0.1 to about 0.8.

4,363,789

ALUMINA PRODUCTION VIA ALUMINUM CHLORIDE OXIDATION

Wendell E. Dunn, Jr., Spearfish, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 20, 1981, Ser. No. 255,639
Int. Cl.[3] C01G *35/00, 33/08*; C01F *7/56*; C01G *49/10*
U.S. Cl. 423—79 1 Claim

1. A method for producing alumina from a material containing alumina, titania, silica and iron values via a chlorination step which process comprises the steps of:

(A) dehydrating the material at a temperature of between about 500° and 1300° K.;

(B) chlorinating the product of step (A) in the presence of chlorine and carbon at a temperature below about 1200° K. and under conditions which provide chlorination of a majority of the iron present in the material without substantial chlorination of titania values present therein with concommittant formation of an iron chloride cloud above the surface of the chlorination reaction mixture;

(C) introducing oxygen into the iron chloride cloud under conditions to cause oxidation of a majority of the iron chloride contained in the cloud;

(D) chlorinating the non-gaseous product of step (B) in the presence of chlorine and carbon at a temperature above about 1300° K. but below the fusion temperature of silica containing components and under conditions sufficient to chlorinate substantially entirely the alumina, titania and silica values contained therein;

(E) reducing and condensing any iron chloride contained with the aluminum chloride in one or more partial iron chloride condensation stages;

(F) absorbing the aluminum chloride under high temperature conditions with an alkali chloride or mixture of alkali chlorides to form an ionic alkali metal aluminum chloride complex;

(G) selectively condensing any impurity chlorides contained in the product of step (F) to produce a purified aluminum chloride-alkali chloride complex;

(H) oxidizing the alkali metal/aluminum chloride complex with oxygen at a temperature above about 500° C. in a fluidized bed pebble reactor; and

(I) separating the solid alumina product.

4,363,790

DESULFURIZATION OF H_2S CONTAINING GAS STREAMS WITH PRODUCTION OF ELEMENTAL SULFUR

Gerald L. Anderson, Romeoville; Harley A. Borders, Berwyn, and F. Otis Berry, Bellwood, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Aug. 14, 1981, Ser. No. 292,422
Int. Cl.[3] B01D *53/04*
U.S. Cl. 423—230 20 Claims

1. A process for desulfurization of gas streams comprising reduced sulfur compound with production of elemental sulfur comprising:

passing said gas stream in contact with solid sulfur removal metal oxide compound selected from the group consisting of chromia, zinc chromite, zinc aluminate, and mixtures thereof at temperatures about 400° to about 1600° F. for reaction of said reduced sulfur compound with said solid metal oxide producing sulfided sulfur removal compound; and

regenerating said sulfided compound by contacting said sulfided compound with oxygen containing gas at temperatures about 1600° to about 2400° F. to produce said sulfur removal metal oxide compound and at least 10 weight percent of the sulfur removed being in the form of elemental sulfur.

4,363,791

ALKANOLAMINIUM CARBOXYLATE SOLVENTS FOR SELECTIVE SO_2 ABSORPTION

H. Lee Trentham, Galveston; John H. Crow, Houston, both of Tex., and Farwell C. Boston, Shreveport, La., assignors to Trentham Corporation, Houston, Tex.

Filed May 4, 1981, Ser. No. 260,308
Int. Cl.[3] C01B *17/00*
U.S. Cl. 423—243 8 Claims

1. A method for preferentially absorbing sulfur dioxide from a gaseous mixture which comprises

contacting said gaseous mixture with an aqueous solution containing from about 3% to about 85% by weight of an alkanolaminium carboxylate.

4,363,792

DEFLUORINATION OF FUMED SILICA

Marylu B. Gibbs, Midland, Mich.; Robert D. Biggs, and David W. Alsgaard, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 150,784, May 19, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,220

Int. Cl.³ C01B *33/18*

U.S. Cl. 423—335 4 Claims

1. A process for defluorinating fluoride-containing fumed silica, which comprises the steps of:

a. premixing the silica and super-heated steam in a venturi ejector thereby forming a high -velocity stream of entrained silica and super-heated steam having a linear flow velocity of at least about three hundred centimeters per second and a temperature above about 1200° F.;

b. passing the stream of entrained silica and steam through an elongated passageway while maintaining the stream at a linear velocity of at least about three hundred centimeters per second and at a temperature above about 1200° F.; the residence time of the stream in the venturi ejector and elongated passageway being betwee about one second and about twelve seconds and the ratio of steam to silica being between about two to one and about twenty to one on a weight basis and

c. separating the silica from the steam, said silica containing less than about 0.5 weight % fluoride.

4,363,793

DIAGNOSTIC RADIOPHARMACEUTICALS FOR LOCALIZATION IN TARGET TISSUES EXHIBITING A REGIONAL PH SHIFT RELATIVE TO SURROUNDING TISSUES

Monte Blau, Buffalo, and Hank F. Kung, Amherst, both of N.Y., assignors to State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 71,189, Aug. 30, 1979, abandoned. This application Aug. 8, 1980, Ser. No. 174,491

Int. Cl.³ A61K *49/00, 43/00*

U.S. Cl. 424—1 21 Claims

1. A method for selectively depositing a radiopharmaceutical compound emitting radiation readily observable by radiation detecting means in at least one target tissue or organ of a mammal, the target tissue or organ having a physiologically significantly different intracellular pH than the blood of the mammal, the method comprising the step of:

introducing a radiopharmaceutical compound, containing a radioactive isotope other than an isotope of iodine, into the bloodstream of the mammal, the compound having such acid-base characteristics that a state of ionization of the compound at the pH of the blood of the mammal is significantly different than its state of ionization at the intracellular pH of the target tissue or organ, the compound having such lipid solubility characteristics that the compound is capable of ready penetration through cell walls of the target tissue or organ wherein due to a change in its state of ionization, its lipid solubility is substantially decreased whereby an ability of the compound to exit from the target tissue or organ is substantially diminished so that the compound is at least temporarily trapped within the target tissue or organ; said compound having at least a 30% positive change in its n-octanol-aqueous medium partition coefficient at a pH change of from 6.60 to 7.60 pH units and containing at least one amine group.

4,363,794

ORAL COMPOSITION FOR CARIES PROPHYLAXIS

Yoshihito Ochiai, Fujisawa; Syozi Nakashima, Yamanishi, Japan, and Midori Hayashi, Yamakita, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Oct. 6, 1978, Ser. No. 949,031

Claims priority, application Japan, Oct. 20, 1977, 52/126102

Int. Cl.³ A61K *7/18, 31/19, 7/16, 33/42*

U.S. Cl. 424—52 8 Claims

1. An oral composition for caries prophylaxis comprising a stannous salt, a water-soluble fluoride salt selected from the group consisting of sodium fluoride, potassium fluoride and mixtures thereof, and an orally acceptable acid selected from the group consisting of a monocarboxylic acid, a dicarboxylic acid, a tricarboxylic acid, a mineral acid and mixtures thereof, said stannous salt being present in the range of from 0.07% by weight of the total amount of the composition as stannous ion to the saturated state in water, the molar ratio of fluoride ion to stannous ion being in the range of from 3.5:1 to 5.7:1 in the aqueous condition, the molar ratio of said monocarboxylic acid to stannous ion being in the range of from 0.8×0.5^n:1 to 30×0.6^n:1, the exponent "n" being the weight percent content of the stannous ion in the composition, and said orally acceptable acid being present in the composition in such an amount that the pH of the composition is in the range of from 2 to 4.

4,363,795

CLEANING AGENT FOR DENTINE SURFACES

Hans Wahlstam, Vällingby, Sweden, assignor to Dental Therapeutics AB, Ektorp, Sweden

PCT No. PCT/SE79/00135, § 371 Date Feb. 15, 1980, § 102(e) Date Jan. 10, 1980, PCT Pub. No. WO80/00057, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 14, 1979, Ser. No. 229,581

Claims priority, application Sweden, Jun. 15, 1978, 7806914

Int. Cl.³ A61K *7/22*

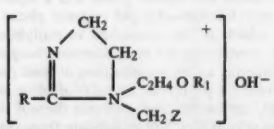
U.S. Cl. 424—54 7 Claims

1. A cleaning agent for dentine surfaces, comprising

10 to 90 parts by weight of (1) benzalkonium chloride, and

90 to 10 parts by weight of (2) an ampholytic tenside having the formula

II



wherein R is the radical of a fatty acid having on an average of 11 to 19 carbon atoms, R_1 is $—CH_2.COOM$ or M, Z is —COOM or $—CH_2.COOM$ and M is an alkali metal or hydrogen, together with

(3) an aminocarboxylic acid sequestering agent, wherein the ratio between the amount of benzalkonium chloride and ampholytic tenside to sequestering agent is from 100:1 to 1:100.

4,363,796

COSMETIC COMPOSITIONS FOR HARDENING SOFT BRITTLE NAILS

Claude Bouillon, Eaubonne; Jean Boulogne, L'Hay-les-Roses; Michel Guillon, Bourg-la-Reine; Christian Zaffran, Elancourt, and Constantin Koulbanis, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Dec. 5, 1978, Ser. No. 967,256

Claims priority, application France, Dec. 16, 1977, 77 37991

Int. Cl.³ A61K *7/04*

U.S. Cl. 424—61 16 Claims

1. A cosmetic composition for reinforcing nails comprising an aqueous, an alcoholic or a hydroalcoholic solution of

(i) 3 to 10% by weight of trimethylolmelamine;

(ii) 0.1 to 5% by weight of at least one non-cationic cosmetic resin, one cationic cosmetic resin, or admixtures thereof;
(iii) at least one plasticizer; and
(iv) a mineral or organic acid.

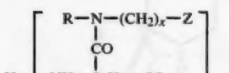
4,363,797

POLYASPARTIC ACID DERIVATIVES, THEIR PREPARATION AND THEIR USE IN COSMETIC COMPOSITION

Bernard Jacquet, Antony; Christos Papantoniou, Montmorency; Gerard Land, Epinay, and Serge Forestier, Claye Souilly, all of France, assignors to Societe Anonyme dite: l'Oreal, Paris, France

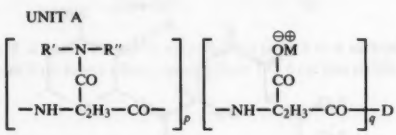
Continuation-in-part of Ser. No. 5,941,573, Sep. 12, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,882
Claims priority, application France, Sep. 14, 1977, 77 27770
Int. Cl.³ D06P 3/04
U.S. Cl. 424—70 **8 Claims**

1. A random polymer represented by the formula



(I)

UNIT A



UNIT B UNIT C

wherein

Z represents a mercapto radical or a sulphonic acid radical, said radical being free or in the form of an alkali metal or an alkaline earth metal salt,

x is an integer from 2 to 6,

R represents hydrogen or lower alkyl,

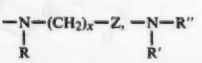
each R′ independently represents hydrogen, lower hydroxyalkyl, alkyl having 1 to 18 carbon atoms or alkenyl having at most 18 carbon atoms,

each R′ independently represents hydrogen, lower hydroxyalkyl or lower alkyl, or

R′ and R″ together with the nitrogen atom to which they are attached form a 6-membered ring which can contain, apart from the said nitrogen atom, an oxygen or nitrogen atom,

M represents hydrogen, alkali metal or half an atom of an alkaline earth metal,

D represents



or ⊖—OM⊕ wherein R, x, Z, R′, R″ and M have the meanings given above,

m is a positive integer corresponding to the number of A units in the polymer, and

p and q are each independently 0 or a positive integer corresponding to the number of B and C units, respectively, in the polymer, such that the sum m+p+q is from about 15 to about 500.

4,363,798

TERMITE BAIT COMPOSITION

Vincent T. D'Orazio, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 9, 1981, Ser. No. 281,542
Int. Cl.³ A01N 25/00, 59/14
U.S. Cl. 424—84 **10 Claims**

1. A termite bait composition, comprising an effective amount of wood innoculated with brown rot, fungus, *lenzites trabea,* and from 0.1 to 20% by weight of a boron containing toxicant selected from the group consisting of ulexite, colemanite, calcium boride and mixtures thereof.

6. A method of protecting a structure from termites comprising placing an effective amount of a bait composition, an effective amount of wood innoculated with brown rot fungus, *lenzites trabea,* and from 0.1 to 20% by weight of a boron containing toxicant selected from the group consisting of ulexite, colemanite, calcium boride and mixtures thereof around said structure.

4,363,799

MONOCLONAL ANTIBODY TO HUMAN T CELLS, AND METHODS FOR PREPARING SAME

Patrick C. Kung, Bridgewater, and Gideon Goldstein, Short Hills, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 20, 1979, Ser. No. 22,132
Int. Cl.³ A61K 39/395; C12N 5/00, 5/02, 15/00; C12Q 1/00; G01N 33/48, 33/68, 33/96
U.S. Cl. 424—85 **11 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with human T cells, which antibody:

(a) reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells or macrophages;

(b) reacts with from about 5% to about 10% of normal human thymocytes;

(c) reacts with leukemic cells from humans with T cell chronic lymphoblastic leukemia but does not react with leukemic cells from humans with T cell acute lymphoblastic leukemia;

(d) exhibits a pattern of reactivity with the human T cell lines HJD-1, CEM, and HSB-2 shown in FIG. 4; and

(e) does not react with Epstein-Barr virus-transformed human B cell lines.

5. Mouse monoclonal antibody which reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages.

6. A monoclonal antibody which reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages, prepared by the method, which comprises the steps of:

(i) immunizing mice with E rosette positive purified human T cells;

(ii) removing the spleens from said mice and making a suspension of the spleen cells;

(iii) fusing said spleen cells with mouse myeloma cells in the presence of a fusion promoter;

(iv) diluting and culturing the fused cells in separate wells in a medium which will not support the unfused myeloma cells;

(v) evaluating the supernatant in each well containing a hybridoma for the presence of antibody to E rosette positive purified T cells;

(vi) selecting and cloning a hybridoma producing antibody which reacts with essentially all normal human peripheral T cells but not with normal human peripheral B cells, null cells, or macrophages; and

(vii) recovering the antibody from the supernatant above said clones.

4,363,800

BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 927,271, Jul. 24, 1978, Pat. No. 4,244,944. This application Sep. 30, 1980, Ser. No. 192,292

Claims priority, application United Kingdom, Nov. 24, 1977, 48980/77

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 4 Claims

1. The method for the treatment of a mammal suffering from pain which comprises administering to the mammal an effective non-toxic pain treatment amount of the compound Tyr.D-Met.Gly.Phe(4NO_2).Pro.NH_2 or a pharmaceutically acceptable acid addition thereof.

4,363,801

METHOD FOR TREATING HYPERBILIRUBINEMIA

Joseph J. Nagyvary, Bryan, Tex., assignor to The Texas A&M University System, College Station, Tex.

Filed Feb. 9, 1981, Ser. No. 232,640

Int. Cl.[3] A61K *31/725, 31/73;* C08B *37/08*

U.S. Cl. 424—180 7 Claims

1. A method of treating hyperbilirubinemia which comprises orally administering to the affected patient an amount of soluble chitosan effective to substantially reduce the amount of bilirubin in the blood.

2. The method of claim 1 in which said chitosan is administered as a water soluble salt in a solution of water with flavor additives.

6. The method as set forth in claim 2 in which said chitosan salt is formed by: dissolving chitosan in a weak acidic solution; agitating said solution; lyophilizing said solution; and pulverizing the chitosan salts from said lyophilizing into a finely ground powder for mixing in said solution of water.

4,363,802

MORANOLINE DERIVATIVES

Shingo Matsumura, deceased, late of Kyoto, Japan (by Rumiko Matsumura, legal representative); Hiroshi Enomoto, Nagaokakyo, Japan; Yoshiaki Aoyagi; Yoji Ezure, both of Otsu, Japan; Yoshiaki Yoshikuni, Uji, Japan; Shigeaki Maruo; Nobutoshi Ojima, both of Kyoto, Japan, and Kiyotaka Konno, Kyoto, Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

Filed Nov. 30, 1981, Ser. No. 325,832

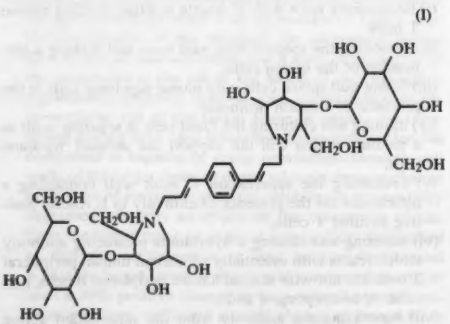
Claims priority, application Japan, Dec. 1, 1980, 55-170009

Int. Cl.[3] A61K *31/70;* C08B *37/00*

U.S. Cl. 424—180 4 Claims

1. Bisglucosyl moranoline of the formula (I)

(I)



4,363,803

3'',4''-OXYALLYLENE ERYTHROMYCIN AND OLEANDOMYCIN, COMPOSITION AND METHOD OF USE

James R. Hauske, East Lyme, Conn., assignor to Pfizer Inc.

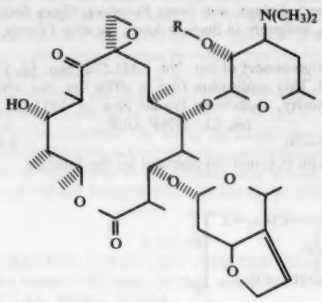
Filed Mar. 1, 1982, Ser. No. 354,124

Int. Cl.[3] A61K *31/71;* C07H *17/08*

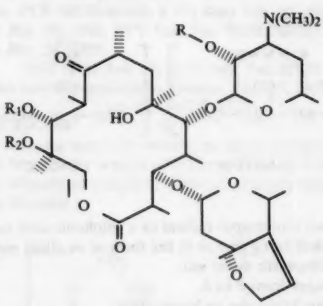
U.S. Cl. 424—180 17 Claims

1. A compound selected from the group consisting of those of the formulae:

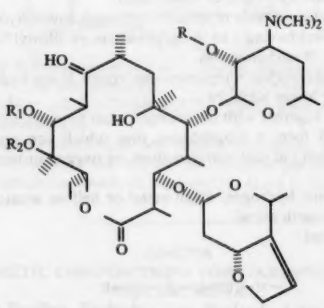
I



II



III



and the pharmaceutically acceptable acid addition salts, wherein R is selected from the group consisting of hydrogen and alkanoyl having two to three carbon atoms; R_1 and R_2 when taken separately are each hydrogen and R_1 and R_2 when taken together are $(CH_3)_2C$.

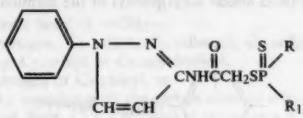
17. A pharmaceutical composition suitable for oral administration comprising a pharmaceutically acceptable carrier and a therapeutically-effective amount of an antibacterial agent wherein said agent is a compound as claimed in claim 1.

4,363,804
PHOSPHONODITHIOYLACETYLAMINO PHENYL PYRAZOLES

Llewellyn W. Fancher, New Castle, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

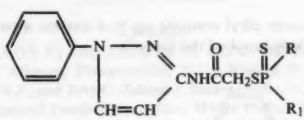
Filed Dec. 21, 1981, Ser. No. 333,201
Int. Cl.³ A01N *57/24, 57/08;* **C07F** *9/65*
U.S. Cl. 424—200 **18 Claims**

1. A compound having the structural formula



wherein R is lower alkoxy or alkyl having from 1 to 6 carbon atoms and R_1 is lower alkoxy having from 1 to 6 carbon atoms.

13. A method for controlling insects or mites comprising applying to the insects, the habitat thereof, or a locus where protection is desired, an insecticidally or miticidally effective amount of a compound having the formula



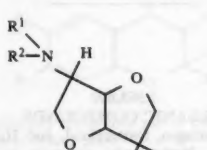
wherein R is lower alkoxy or alkyl having from 1 to 6 carbon atoms, and R_1 is lower alkoxy having from 1 to 6 carbon atoms.

4,363,805
AMINODESOXY-1.4;3.6-DIANHYDROHEXITOL NITRATES AND PHARMACEUTICAL COMPOSITION

Klaus Klessing, Ettlingen; Shyam S. Chatterjee, and Bernard L. Gabard, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Firma Willmar Schwabe, Karlsruhe, Fed. Rep. of Germany

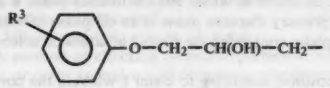
Filed Jul. 20, 1981, Ser. No. 285,036
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028340
Int. Cl.³ A61K *31/34, 31/455;* **C07D** *493/04*
U.S. Cl. 424—230 **85 Claims**

1. Aminodesoxy-1.4;3.6-dianhydrohexitol nitrates of the general formula I,



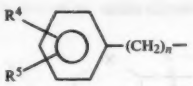
(I)

wherein R^1 and R^2, independently of one another, signify a hydrogen atom or a lower alkyl group with 1 to 4 C-atoms or wherein R^1 signifies a hydrogen atom or a lower alkyl group with 1 to 4 C-atoms and R^2 an acyl residue of an aliphatic or singly unsaturated, possibly methyl-substituted monocarboxylic acid with 2 to 8 C-atoms, a nicotinoyl, 2-O-acetylsalicoyl radical or a 1-adamantyl radical; or wherein R^1 signifies a hydrogen atom and R^2 a 2-hydroxy-3-(subst.)-phenoxyprop-1-yl radical of the general formula Ia



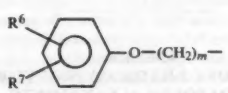
(Ia)

wherein R^3 signifies a hydrogen atom, a lower alkyl or lower alkenyl group with 1 to 4 C-atoms, the trifluoromethyl radical, a hydroxyl group, a lower alkoxy or lower alkenyloxy group with 1 to 4 C-atoms, a cyano group or a carbamoylmethyl radical; or wherein R^1 signifies a hydrogen atom and R^2 a 2-hydroxy-3-(α-naphthyloxy)-prop-1-yl radical, whereby the ring of the naphthalene skeleton which is not etherified with the hydroxypropyl group can be completely or partly hydrogenated or substituted by an oxo group; or wherein R^1 signifies a hydrogen atom or a lower alkyl group with 1 to 4 C-atoms and R^2 an ω-(subst.)-phenylalkyl group of the general formula Ib



(Ib)

wherein n can be=a whole number from 1 to 6 and R^4 and R^5, in each case independently of one another, signify a hydrogen atom, a lower alkyl or alkenyl group with 1 to 4 C-atoms, the trifluoromethyl radical, a hydroxyl group, a lower alkoxy or lower alkenyloxy group with 1 to 4 C-atoms or a fluorine or chlorine atom; or wherein R^1 signifies a hydrogen atom or a lower alkyl group with 1 to 4 C-atoms and R^2 the diphenylmethyl radical or cinnamyl radical; or wherein R^1 signifies a hydrogen atom or a lower alkyl group with 1 to 4 C-atoms and R^2 an ω-(subst.)-phenoxyalkyl group of the general formula Ic



(Ic)

wherein m can be=a whole number from 2–8 and R^6 and R^7, independently of one another, signify a hydrogen atom, a lower alkyl or lower alkenyl group while 1 to 4 C-atoms, the trifluoromethyl radical, a hydroxyl group, a lower alkoxy or lower alkenyloxy group with 1 to 4 C-atoms, a fluorine or chlorine atom, the amino or acetylamino group, a mono- or di-lower alkylamino group with 1 to 4 C-atoms or R^6 and R^7, together with the phenyl radical, form the α-naphthyl radical; or wherein R^1 and R^2, together with the nitrogen atom to which they are attached, represent the residue of a cyclic, non-aromatic secondary amine with 5 to 7 ring atoms which possibly contains a furher hetero atom; or wherein R^1 and R^2 together signify a pyridoxylidene radical; as well as their pharmacologically acceptable acid-addition salts.

84. A pharmaceutical composition comprising a pharmaceutically effective amount of the aminodesoxy-1.4;3.6-dianhydrohexitol nitrate of claim **1** and conventional carriers and additions therefore.

4,363,806
PHARMACEUTICAL COMPOSITION

Karl O. Bergström; Jan Ulmius, both of Lund, and Bo L. T. Wenngren, Malmö, all of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Filed Jun. 12, 1981, Ser. No. 272,881
Claims priority, application Sweden, Jun. 19, 1980, 8004580
Int. Cl.³ A61K *31/58*
U.S. Cl. 424—241 **8 Claims**

1. A pharmaceutical composition for topical application

comprising a topically active anti-inflammatory corticosteroid in a multiple emulsion in which the continuous phase is aqueous and the primary disperse phase is an oil phase in which a hydrophilic phase containing the steroid in saturated solution is dispersed.

2. A composition according to claim 1 wherein the corticosteroid is 16α,17α-(2'-hydrogen-2'-n-propyl)methylenedioxypregna-1,4-diene-11,21-diol-3,20-dione.

4,363,807

CEPHAM COMPOUNDS

Takao Takaya, Kawanishi; Takashi Masugi, Toyonaka, and Toshiyuki Chiba, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

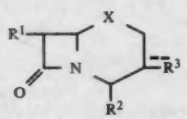
Filed Oct. 17, 1979, Ser. No. 103,821

Claims priority, application Japan, Oct. 17, 1978, 53-40789

Int. Cl.[3] **C07D** *501/20;* **A61K** *31/545*

U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula:



wherein R^1 is phenyl (lower) alkanoylamino, phenoxy (lower) alkanoylamino or aminothiazolyl (lower) alkanoylamino substituted with a lower alkoxyimino group,

R^2 is carboxy or a protected carboxy group,

R^3 is formyl, hydroxymethyl or acyloxymethylene, and

X is —S— or —SO—,

and its salt.

4,363,808

N-(3-PHENOXY-2-HYDROXYPROPYL)BENZIMIDAZOLE-1-ALKANAMINES

Julius Diamond, Mountain Lakes, and Ronald A. Wohl, Morris Plains, both of N.J., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

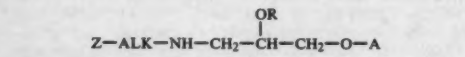
Continuation-in-part of Ser. No. 120,416, Feb. 11, 1980, abandoned. This application May 7, 1981, Ser. No. 261,331

Claims priority, application European Pat. Off., Feb. 10, 1981, 81730014.8; Ireland, Feb. 10, 1981, 250/81; Japan, Feb. 12, 1981, 56-1955

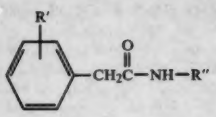
Int. Cl.[3] **A61K** *31/535;* **C07D** *473/00, 471/04*

U.S. Cl. 424—248.51 **7 Claims**

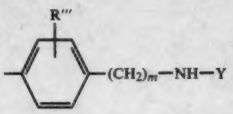
1. A compound of the formula:



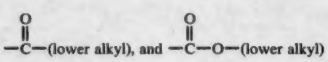
wherein Z is selected from the group consisting of 4,5,6,7-tetrahydro-1-benzimidazolyl, 1H-imidazo[4,5-b]-pyridin-1-yl, 1H-imidazo[4,5-c]pyridin-1-yl and (9H)-9-purinyl; ALK is alkylene containing 2 to 6 carbon atoms; R is selected from the group consisting of hydrogen, lower alkanoyl containing up to 6 carbon atoms, carboxy (lower alkanoyl) containing up to 4 carbon atoms, carboxyacryloyl, benzoyl, toluoyl and phenyl (lower alkanoyl) wherein the lower alkanoyl portion contains up to 4 carbon atoms; and A is selected from the group consisting of phenyl, tolyl, hydroxyphenyl, halophenyl, nitrophenyl, trifluoromethylphenyl, cyanophenyl, cyclopentylphenyl, allylphenyl, allyloxyphenyl, dimethoxyphenyl, carbamoylmethylphenyl of the formula



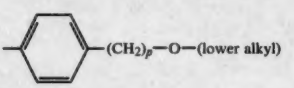
wherein R' is hydrogen, methyl or halogen and R'' is hydrogen, lower alkyl containing up to 4 carbon atoms, (acid amido)-phenyl and (acid amido alkyl)phenyl of the formula



wherein m is 0–2, R''' is hydrogen, methyl, acetyl or halogen and Y is



in which lower alkyl contains up to 4 carbon atoms, (lower alkyl)oxyalkylphenyl of the formula



wherein p is 2 or 3 and lower alkyl contains up to 4 carbon atoms; naphthyl, indenyl, tetrahydronaphthyl, 1-oxo-1,2,3,4-tetrahydro-5-naphthyl, 2,3-dihydroxy-1,2,3,4-tetrahydro-5-naphthyl, indolyl, 2-methylindolyl, 3,4-dihydro-2(1H)-quinolinon-5-yl, 5-methylcoumarin-8-yl, cyanopyridyl, carboxypyridyl, carbamoylpyridyl, alkoxycarbonylpyridyl, thiazolyl and 4-morpholino-1,2,5-thiadiazol-3-yl; or a pharmaceutically acceptable acid addition salt thereof.

7. The method of effecting β-adrenergic activity in a mammalain host having a condition in which therapeutic benefit is derived from inhibition of the β-adrenergic receptors which comprises administering to said host a non-toxic effective adrenergic β-receptor inhibiting dose of a compound as claimed in claim 1.

4,363,809

ORGANIC COMPOUNDS

Magda Marko, Binningen, Switzerland, and Hendricus B. A. Welle, Maarssen, Netherlands, assignors to Sandoz Ltd., Basel, Switzerland

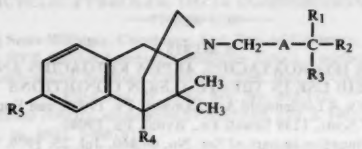
Continuation-in-part of Ser. No. 173,306, Jul. 29, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,813

Claims priority, application United Kingdom, Aug. 3, 1979, 7927061

Int. Cl.[3] **A61K** *31/485*

U.S. Cl. 424—260 **10 Claims**

1. A method of inhibiting luteinizing hormone secretion in a subject in need of such treatment, which method comprises administering to said subject a luteinizing hormone inhibiting effective amount of a compound of formula I,



I

wherein

A is a direct bond or —CH_2—,

R_1 is hydrogen, C_{1-3}alkyl, C_{2-3}alkenyl, C_{2-3}alkynyl, C_{1-2}alkoxy, C_{1-2}alkyl or C_{3-6}cycloalkyl,

R_2 is hydrogen or C_{1-3}alkyl, or

R_1 and R_2, together with the carbon atom to which they are attached, form a C_{3-6}-cycloalkyl group or a 4 to 6-membered heterocycloalkyl group containing one oxygen atom as the solo hetero atom,

R_3 is hydroxy, C_{1-4}alkoxy, C_{2-4}alkenyloxy, or R_6COO— in which R_6 is hydrogen, C_{1-3}-alkyl, phenyl or benzyl,

R_4 is hydrogen, C_{1-4}alkyl or phenyl, and

R_5 is hydrogen, hydroxy, C_{1-3}alkoxy or R_7COO— where R_7 is hydrogen, C_{1-3}alkyl, phenyl, benzyl, phenethyl or 3-pyridyl.

4,363,810
FLAVOR STABILIZED BEET COMPOSITION

Joseph D. Albaum, Pleasantville, N.Y.; Ronald W. Ponzoni, Nutley, N.J., and Eric C. Johnson, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,570

Int. Cl.³ A23L *1/272*

U.S. Cl. 426—262 **14 Claims**

1. A co-dried food color composition comprising;

(a) beet extract; and

(b) a flavor-stabilizing amount of from 40–80%, by weight, of a food-acceptable alkali metal salt.

4,363,811
ANTI-HYPERTENSIVE CHROMANOL DERIVATIVES

John M. Evans, Roydon; Graham A. Showell, and Charles S. Fake, both of Harlow, all of England, assignors to Beecham Group Limited, England

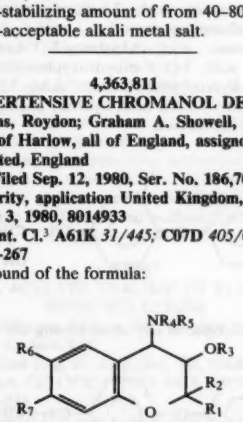
Filed Sep. 12, 1980, Ser. No. 186,708

Claims priority, application United Kingdom, Sep. 28, 1979, 7933683; May 3, 1980, 8014933

Int. Cl.³ A61K *31/445*; C07D *405/04*

U.S. Cl. 424—267 **9 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt or ester thereof, wherein

R_1 is hydrogen or lower alkyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen or lower alkyl;

R_4 is hydrogen or lower alkyl;

R_5 is lower alkyl or alkyl of 3 to 5 carbon atoms terminally substituted by chlorine;

or R_4 and R_5 are joined so that together with the nitrogen atom to which they are attached they form a 6- or 7-membered saturated heterocyclic ring containing said nitrogen atom as the sole hetero atom or a 5-membered saturated heterocyclic ring optionally containing an oxygen or sulphur atom as an additional hetero atom;

R_6 is amino, carboxylic acylamino of up to 3 carbon atoms, alkylamino of up to 3 carbon atoms, or dialkylamino of up to 3 carbon atoms in each alkyl moiety;

R_7 is nitro or cyano; and

the NR_4R_5 and OR_3 groups are trans.

9. A method of effecting an anti-hypertensive response in a human or other animal which comprises administering thereto an effective amount of a compound according to claim 1.

4,363,812
3-(TETRAZOL-5-YL), 4-METHYL-8-ALKOXY COUMARINS AND ANTI-ALLERGIC COMPOSITIONS THEREOF

Kiyoshi Kuriyama, Takatsuki; Jun Nakano, Moriyama; Kiyonosin Itikawa, Otsu; Kiyoshi Ito, Otsu; Yuji Suzuki, Otsu, and Katsuro Ishizuki, Otsu, all of Japan, assignors to Kakenyaku Kako Co., Ltd., Tokyo, Japan

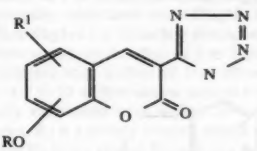
Filed Nov. 15, 1979, Ser. No. 94,502

Claims priority, application Japan, Nov. 30, 1978, 53/149382

Int. Cl.³ A61K *31/41*; C07D *257/06*

U.S. Cl. 424—269 **6 Claims**

1. A coumarin derivative of the formula:



wherein R is a normal pentyl group, a normal hexyl group, and a normal heptyl group, the OR group being positioned on the 8 position of the coumarin ring, and wherein R^1 is hydrogen or methyl, said R^1 being positioned on the 6 position of the coumarin ring.

6. A pharmaceutical composition having an anti-allergic activity which comprises, as the essential active ingredient, an effective amount of a coumarin derivative selected from the group consisting of 8-n-pentyloxy-3-(1H-tetrazol-5-yl)-coumarin, 8-n-hexyloxy-3-(1H-tetrazol-5-yl)-coumarin, and 8-n-heptyloxy-3-(1H-tetrazol-5-yl)-coumarin or a pharmaceutically acceptable salt of said coumarin derivative and a pharmaceutically acceptable carrier.

4,363,813
2-(3,4,5-TRIMETHOXYPHENYL)-4,5-DISUBSTITUTED THIAZOLES

Takao Kawasaki, Sayama; Yoshiaki Osaka, Nagareyama, and Tadashi Tsuchiya, Matsudo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

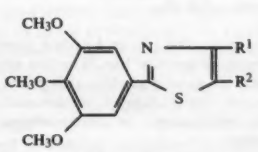
Filed Jun. 27, 1980, Ser. No. 163,507

Claims priority, application Japan, Jul. 9, 1979, 54-87055; May 23, 1980, 55-68507

Int. Cl.³ C07D *233/54*; A61K *31/425*

U.S. Cl. 424—270 **4 Claims**

1. 2-(3,4,5-trimethoxyphenyl)-4,5-disubstituted thiazole represented by the formula:



wherein R^1 represents an alkyl group of C_1 to C_3 and R^2 represents a hydrogen atom, an alkyl group of C_1 to C_3, an acetyl group, a carboxyl group of ester group thereof with an alcohol of C_1 to C_3, a carbamoyl group or a hydrazinocarbonyl group,

and wherein the carbonyl group of said acetyl group may also be converted to oxime, oxime-acetate, semicarbazide or guanylhydrazone.

4,363,814

AMINOALKYL-SUBSTITUTED HETEROCYCLES

Anton Mentrup, Mainz-Kastel; Kurt Schromm; Ernst-Otto Renth, both of Ingelheim; Richard Reichl, Ingelheim, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 102,904, Dec. 13, 1979, Pat. No. 4,271,158, which is a division of Ser. No. 26,608, Apr. 3, 1979, Pat. No. 4,215,119, which is a continuation-in-part of Ser. No. 773,394, Mar. 2, 1977, Pat. No. 4,154,829. This application Dec. 22, 1980, Ser. No. 218,786

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1976, 2609645

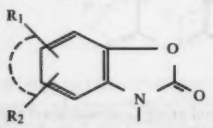
Int. Cl.[3] **C07D** *263/54;* **A61K** *31/42*

U.S. Cl. 424—272 **13 Claims**

1. A racemic or optically active compound of the formula

$$Q—C_nH_{2n}—NH—R$$

wherein Q is



where

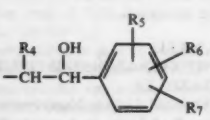
R_1 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl or amino,

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl, or

R_1 and R_2, together with each other, are methylenedioxy or ethylenedioxy;

n is an integer from 2 to 6, inclusive; and

R is hydrogen, benzyl or



where

R_4 is hydrogen, methyl or ethyl,

R_5, R_6 and R_7, which may be identical to or different from each other, are each hydrogen, halogen, hydroxymethyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, cyano, —$CONHR_3$, —CONHOH, —$COOR_3$, R_8O—, methylsulfonylmethyl or, when one or two of R_5 through R_7 are other than halogen or trifluoromethyl, also —NR_3R_9,

where

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_8 is hydrogen, alkanoyl of 1 to 20 carbon atoms, alkyl of 1 to 4 carbon atoms or phenyl(C_{1-4})alkyl and

R_9 is hydrogen, lower alkanoyl, methanesulfonyl, carbamoyl, dimethylsulfamoyl, or alkoxycarbanoyl of 2 to 5 carbon atoms,

with the proviso that R_5, R_6, and R_7 cannot all be tert.butyl, or

R_5 and R_6, together with each other are —O—CH_2—O—, —O—CH_2CH_2—O—, —CH=CH—CH=CH—, —O—CH_2—CONH—, or —O—CO-NH,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,363,815

ALPHA HYDROXYACIDS, ALPHA KETOACIDS AND THEIR USE IN TREATING SKIN CONDITIONS

Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046

Continuation-in-part of Ser. No. 60,460, Jul. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 870,114, Jan. 17, 1978, Pat. No. 4,197,316, which is a division of Ser. No. 720,835, Sep. 7, 1976, Pat. No. 4,105,783, which is a continuation-in-part of Ser. No. 598,224, Jul. 23, 1975, Pat. No. 4,021,572. This application Apr. 30, 1980, Ser. No. 145,240

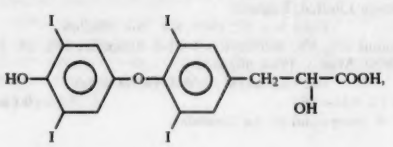
The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.

Int. Cl.[3] **A61K** *31/19, 31/40*

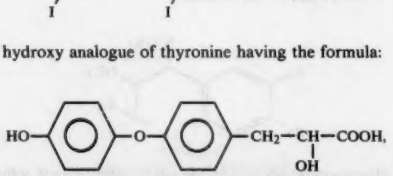
U.S. Cl. 424—274 **12 Claims**

1. A therapeutic composition effective against skin disease conditions characterized by inflammation or disturbed keratinization comprising: at least one compound selected from the group consisting of:

2-hydroxy-3-methylpentanoic acid, 2,3-dihydroxybutanoic acid, 2-hydroxy-3-mercaptopropanoic acid, 3,3-dithiobis (2-hydroxypropanoic acid), 2-hydroxy-4-(methylthio)-butanoic acid, 2-hydroxy-4-(methylsulfoxide)butanoic acid, 2-hydroxy-4-(methylsulfonyl)butanoic acid, 2-hydroxy-5-guanidopentanoic acid, 2,6-dihydroxyhexanoic acid, 2-hydroxy-6-aminohexanoic acid, 2,5,6-trihydroxyhexanoic acid, 2,5-dihydroxy-6-aminohexanoic acid, 2-hydroxy-3-(4-imidazolyl)propanoic acid, 2-hydroxy-3-(4-hydroxyphenyl)propanoic acid, 2-hydroxy-3-(3′ indolyl) propanoic acid, 2-hydroxy-4-mercaptobutanoic acid, 4,4′-dithiobis (2-hydroxybutanoic acid), 2,4-dihydroxybutanoic acid, 2-hydroxy-3-sulfinopropanoic acid, 3-aminolactic acid, 2,4-dihydroxybutanoic acid, 2-hydroxy-2-methyl-butanoic acid, 2,5-dihydroxypentanoic acid, 2-hydroxy-5-ureidopentanoic acid, 2-hydroxy-6-ureidohexanoic acid, 2-hydroxy-3-(5′-hydroxyindolyl)-propanoic acid, 3-(3′,4′-dihydroxyphenyl)lactic acid, 3-(3′-iodo-4′-hydroxyphenyl) lactic acid, 3-(3′5′-diiodo-4′-hydroxyphenyl) lactic acid, hydroxy analogue of thyroxine having the formula:



hydroxy analogue of thyronine having the formula:



quinic acid, 3-hydroxypropanoic acid, glyceruric acid, threuric acid, erythreuric acid, xyluric acid, lyxuric acid, arabinuric acid, riburic acid, iduric acid, guluric acid, mannuric acid, altruric acid, alluric acid, taluric acid, 2-hydroxy-3-sulfonopropanoic acid, 2-hydroxy-3-thio-s-(3′-hydroxy-1′,1′,-dimethylpropyl) propanoic acid, P-hydroxyphenylglycolic acid, O-acetylmandelic, acid trihydroxy butanoic acid, tetrahydroxy pentanoic acid, pentahydroxyhexanoic acid and hexahydroxyheptanoic acid, or a salt thereof present in an effective amount in a pharmaceutically or cosmetically acceptable lotion, gel, shampoo, spray, stick, powder, cream or ointment.

4,363,816
TRICYCLIC PYRROLES, THEIR COMPOSITIONS AND THEIR USE

Jörg Senn-Bilfinger, Constance, Fed. Rep. of Germany, assignor to BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschrankter Haftung, Constance, Fed. Rep. of Germany

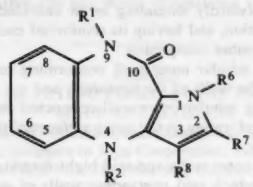
Filed Jan. 29, 1982, Ser. No. 344,172

Claims priority, application Switzerland, Feb. 2, 1981, 651/81; Aug. 26, 1981, 5488/81

Int. Cl.[3] **A61K** *31/55;* **C07D** *487/04*

U.S. Cl. 424—274 **17 Claims**

1. A tricyclic pyrrole of the formula



(I)

wherein

R^1 is —H or lower alkyl;

R^2 is —H or —CO—C_nH_{2n}—R^3;

R^3 is halo or —$N(R^4)R^5$;

R^4 is —H, lower alkyl, alkenyl with from 3 to 5 carbon atoms or, together with R^5 and the nitrogen atom to which both are bonded, pyrrolidino, piperidino, morpholino, perhydroazepino, 1-piperazinyl, 4-methyl-1-piperazinyl, 4-ethyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-homopiperazinyl or 4-methyl-1-homopiperazinyl;

R^5 is alkenyl with from 3 to 5 carbon atoms, lower alkyl, di(lower)alkylamino(lower)alkyl or, together with R^4 and the nitrogen atom to which both are bonded, pyrrolidino, piperidino, morpholino, perhydroazepino, 1-piperazinyl, 4-methyl-1-piperazinyl, 4-ethyl-1-piperazinyl, 4-benzyl-1-piperazinyl, 1-homopiperazinyl or 4-methyl-1-homopiperazinyl;

each of R^6, R^7 and R^8 is, independently, —H or lower alkyl; and

n is a positive whole number of at most 2;

or an acid-addition salt thereof.

15. A medicament composition comprising excipient or carrier and from 0.5 to 95 percent by weight of a pharmacologically-active and physiologically-acceptable compound according to claim **1** in free-base or acid-addition-salt form.

4,363,817
ENOL ACYLATE ANALOGS OF E_1 AND E_2 PROSTAGLANDINS

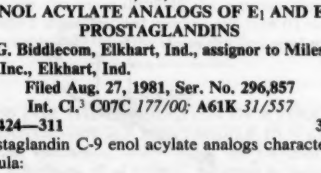
William G. Biddlecom, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 27, 1981, Ser. No. 296,857

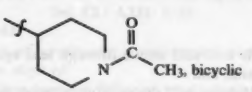
Int. Cl.[3] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 424—311 **38 Claims**

1. Prostaglandin C-9 enol acylate analogs characterized by the formula:



wherein: the dashed line in the cyclopentyl ring represents the presence of a double carbon-carbon bond at either C_8–C_9 or C_9–C_{10}; Z is cis vinylene or ethylene; n is 0 or 1; A represents the presence of a single carbon-carbon bond between C_7 and C_8 which is in the α configuration when there is a double carbon-carbon bond between C_9 and C_{10} and is in the plane of the 5 membered ring when there is a double carbon-carbon bond between C_8 and C_9; X is CH_2OH, CH_2OCOCH_3, $CONHR_4$, CO_2M where M is H^+, K^+, ½ Ca^{++}, $NH_3{}^+C(C_2H_5OH)_3$ or another pharmacologically acceptable salt cation, CH_3 or C_2H_5; R_1 is n-alkyl of 1 to 20 carbon atoms which is optionally replaced with oxa groups, cyclic alkyl or 3 to 12 carbon atoms optionally replaced with nitrogen to form an imido group of the formula



bicyclic alkyl of 7 to 12 carbon atoms, aryl of 6 to 12 carbon atoms optionally substituted with an n-alkyl group of 1 to 10 carbon atoms or one or more halogen atoms, alkenyl (Z and/or E) of 2 to 12 carbon atoms, alkenyl-alkyl of 3 to 12 carbon atoms or O-n-alkyl of 1 to 20 carbon atoms wherein all of the above are optionally substituted with CO_2M, $CONHR_4$ or acetate; R_2 is H, n-alkyl of 1 to 10 carbon atoms, branched alkyl of 3 to 10 carbon atoms, cyclic alkyl of 3 to 10 carbon atoms optionally substituted with n-alkyl of 1 to 10 carbon atoms, bicyclic alkyl of 7 to 12 carbon atoms, aryl of 6 to 12 carbon atoms optionally substituted with n-alkyl of 1 to 10 carbon atoms or halogen, R_3 is a moiety coming within the definition of R_2 except that R_3 is not H; and R_4 is H or a moiety coming within the definition of COR_1.

4,363,818
METHOD FOR RELIEF OF BURNING, ITCHING, AND PAIN OF CUTANEOUS AND MUCOSAL SURFACES

Sheldon K. Gottlieb, 8708 Wandering Trail Dr., Potomac, Md. 20854

Continuation-in-part of Ser. No. 126,997, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 857,526, Dec. 5, 1977, Pat. No. 4,167,945, which is a continuation-in-part of Ser. No. 764,229, Jan. 31, 1977, Pat. No. 4,061,731, which is a continuation-in-part of Ser. No. 576,858, Jun. 4, 1975, Pat. No. 4,006,220. This application Nov. 17, 1980, Ser. No. 207,738

Int. Cl.[3] **A61K** *31/195*

U.S. Cl. 424—319 **3 Claims**

1. Method for the relief of any one or more sensations of burning, pain and itching of the cutaneous or mucosal surface of animals and humans that is free of lesions comprising the step of topically applying to the situs of said condition a composition consisting essentially of (A) a compound selected from the group consisting of: (1) aminocaproic acid, (2) a compound of the formula $4NH_2CH_2(CH_2)_4COOH.CaX_2$ wherein X is chloride or bromide, or (3) mixtures thereof, and (B) an inert pharmaceutically acceptable carrier, wherein said compound is present in an amount effective to diminish the sensations of burning, pain and itching.

4,363,819
SAUSAGE-CASING LOADING METHOD AND CASING/SLEEVE COMBINATION THEREFOR

Remy A. E. Steffen, Aspres sur Buech, Hautes-Alpes, France

Filed Aug. 6, 1980, Ser. No. 175,920

Claims priority, application France, Aug. 8, 1979, 79 20735

Int. Cl.[3] **A22C** *13/00*

U.S. Cl. 426—132 **14 Claims**

1. A method of loading sausage-casing sections onto the nozzle of a sausage-stuffing machine,

said casing sections being carried on a flexible synthetic-resin sleeve having a laterally open aperture, a pair of longitudinal ends, and a tear line extending longitudinally from said aperture to one of said ends,

said sections having overlapping ends and being longitudinally compressed accordion-fashion on said sleeve between said aperture and said one end;

said method comprising the steps of:

fitting the sleeve carrying the succession of overlapped casing sections backwardly over said nozzle by inserting

said nozzle into said sleeve through said aperture toward said one end; and

thereafter stripping said sleeve from between said nozzle and said sections to split said sleeve along said tear line and leave said succession of overlapped casing sections on said nozzle.

4,363,820

PROCESS FOR PREPARING CANNED TUNA FISH

John H. Ernster, 5658 Ravenspur, Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 179,771, Aug. 20, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,319

Int. Cl.³ A23B *4/14*

U.S. Cl. 426—257 **11 Claims**

1. A process for preparing and storing tuna fish flesh for consumption which comprises:

treating casein with a compound, selected from the group consisting of sodium hydroxide and potassium hydroxide, in the presence of water;

adding a quantity of the treated casein and a quantity of tuna fish flesh to a sealable container;

sealing said container;

heat treating said sealed container at a temperature sufficient to prevent spoilage of said flesh; and then

cooling said container.

4,363,821

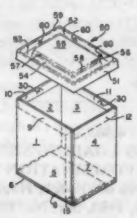
METHOD OF PACKAGING ICE CREAM IN A CLOSABLE CONTAINER

Thomas VanderLugt, Jr., Kalamazoo, Mich., assignor to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 71,242, Aug. 30, 1979. This application Sep. 12, 1980, Ser. No. 186,616

Int. Cl.³ B65B *7/28*; A23L *3/36*

U.S. Cl. 426—393 **7 Claims**



1. A method of packaging ice cream product comprising the steps of

filling semi-solid ice cream product into a tubular container formed from an integral blank which is cut and scored to provide a tubular container comprising substantially rectangular rear, side, and front wall members, a glue flap articulated along a score to one of said container wall members and adhered to an adjacent container wall member, bottom-forming flaps articulated to each of said wall members along scores at one end of said blank, and edge-reinforcing flaps articulated to each of said container rear, side, and front wall members at the other end of said blank having areas of low resistance defined therein and being folded over and adhered to said adjacent wall members to which said flaps are articulated, thereby to form a folded-over, reinforced portion of double thickness at that end of the tubular container erected from said blank, with said areas of low resistance being present in the inner exposed surface of folded-over edge-reinforced portions of the walls of said container, having its wall members connected by means of said glue flap, having its bottom-forming flaps outwardly extending in an unfolded and non-secured position, and having its reinforced end closed by a closure member comprising:

an upstanding tubular inner wall conforming to the inner surfaces of the walls of the container, and

a downstanding tubular outer wall connected thereto by a bight and conforming to the outer surfaces of the walls of the container,

said inner and outer walls and said bight forming a tubular channel in which said upstanding walls of said tubular container are seated in frictional engagement,

a centrally-located upwardly-elevated dome portion, defined by an upstanding dome-forming wall which is inwardly spaced from the said upstanding tubular inner wall of said closure member,

the said two upstanding walls of said closure member defining a tubular valley therebetween,

and lugs formed in said upstanding tubular inner wall,

said lugs complementarily extending into said areas of low resistance in the inner exposed surface of the walls of said container at the end thereof closed by the closure member, for releasably securing said container closure member to said tubular container walls,

closing the bottom-forming flaps on the open end of said container and adhering them to each other, and

subjecting the package to hardening at a temperature below about zero degrees centigrade to solidify the semi-solid ice cream product.

4,363,822

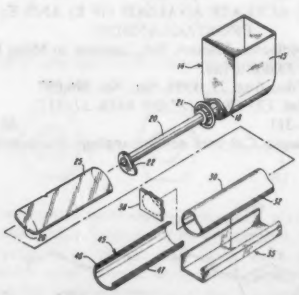
METHOD FOR PRODUCING A RESTRUCTURED MEAT PRODUCT

Charles F. Kleptz, 11700 Haber Rd., Union, Ohio 45322

Filed Jan. 28, 1981, Ser. No. 229,198

Int. Cl.³ A23B *4/06*; A22C *7/00*

U.S. Cl. 426—513 **5 Claims**



1. A method of producing a frozen restructured meat product adapted to have a predetermined non-cylindrical shape, comprising the steps of mixing pieces of meat within a mixer having a screw extruder extending adjacent an outlet, attaching an elongated discharge tube to the outlet, surrounding the discharge tube with a flexible bag, surrounding the bag and the

discharged tube with a tubular mold having an inner non-cylindrical surface corresponding to the predetermined shape, mounting on the outer end portion of the discharge tube a retaining member conforming substantially to the inner non-cylindrical surface of the tubular mold, closing the outer end of the tubular mold with an end closure member, extruding the mixed meat product through the discharge tube and into the bag and mold while moving the bag and mold longitudinally relative to the discharged tube, filling the bag while confining the mixed meat product within the mold between the retaining member and the end closure member to produce a predetermined pressure within the product, sliding the bag and formed meat product from the mold, and freezing the formed meat product within the bag while maintaining the shape of the product.

4,363,823

METHOD OF FRYING FOODS IN THE PRESENCE OF A SPICE ANTIOXIDANT

Yukichi Kimura, Narashino, and Takeshi Kanamori, Chiba, both of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 207,932

Claims priority, application Japan, Nov. 24, 1979, 54-152240

Int. Cl.³ C11B *5/00*

U.S. Cl. 426—542 **2 Claims**

1. A method for producing fried foods, comprising the steps of:

adding an antioxidant to a frying oil;

adding an additive to said frying oil and/or to a foodstuff, said additive being present in an amount of 1–100 parts by weight per 1–10 parts by weight of said antioxidant in the frying oil, said additive being selected from the group consisting of a mixture of dihydroxyacetone and amino acid, quercetin, miso peptide, casein peptide, and phytic acid; and

frying the foodstuff in said frying oil at 100°–250° C.;

said antioxidant being added to said frying oil in an amount of 0.001–0.2% by weight and being obtained by (a) subjecting a starting material, selected from the group consisting of a herb family spice selected from sage and rosemary, residue obtained after the recovery of essential oils from said herb family spice, oleoresins obtained from the extraction of said herb family spice with a polar solvent, and oleoresins and extracted residues obtained from the extraction of said herb family spice with a non-polar solvent, to an extraction treatment with a polar solvent to obtain an extractive, (b) decoloring the extractive with an adsorbent, (c) concentrating the extractive after separation of said adsorbent, (d) pouring the concentrate into ten times by weight or more of water to obtain an aqueous dispersion, (e) steam distilling the aqueous dispersion to produce a steam distilled residue, and then (f) recovering an insoluble part from the steam distilled residue.

4,363,824

PROCESS FOR THE PRODUCTION OF A FOOD BASE INSTANTANEOUSLY DISPERSIBLE IN WATER

Albert Willi, Wallisellen; Willy Maute, and Oswaldo Mooser, both of Effretikon, all of Sweden, assignors to Societe D'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 12, 1980, Ser. No. 206,149

Claims priority, application Switzerland, Nov. 15, 1979, 10196/79

Int. Cl.³ A23L *1/195*

U.S. Cl. 426—589 **13 Claims**

1. A process for the production of a food base instantaneously dispersible in water which comprises:

(a) mixing a flour material and a hot molten fat in a ratio of from 55:45 to 80:20 by weight;

(b) subjecting the mixture to controlled cooling in order to obtain crystal modification in the fat so that the liquid fat content in the fat at approximately 25° to 35° C. is less than 50%; whereby the food based obtained, after dispersion in water has a lump count of less than 2% by weight based on the total weight of the food base and a viscosity in the range of from 20 mPa to 35 mPa, based on 12 grams of the food base dispersed in 150 ml of water.

4,363,825

PROCESS FOR MAKING A COCONUT PRODUCT

Guy C. Coker, Dover, Del., assignor to General Foods Corporation, White Plains, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,496

Int. Cl.³ A23L *1/36*

U.S. Cl. 426—617 **5 Claims**

1. A process of producing a sweetened coconut product comprising the steps of:

a. finely milling coconut flakes to produce a creamed coconut;

b. combining 4 to 23 parts by weight of creamed coconut, from 5 to 6 parts by weight of glycerol monostearate, and from 19 to 52 parts by weight of polyhydric alcohols, with from 80 to 110 parts by weight of water;

c. loosening compacted shredded coconut flakes;

d. spraying the creamed coconut solution onto said shredded coconut flakes; and

e. coating the liquid-coated shredded coconut with a high surface-area sugar.

4,363,826

EMULSIFIER COMPOSITION AND QUALITY IMPROVEMENT METHOD FOR STARCH CONTAINING FOODS

Tetsuro Fukuda, Hirakata; Hideo Matsuura, Toyonaka; Yoshihito Koizumi, Makado, and Takeshi Yamaguchi, Chiba, all of Japan, assignors to Riken Vitamine Oil Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 107,914, Dec. 28, 1979, abandoned. This application Aug. 13, 1981, Ser. No. 292,416

Claims priority, application Japan, Apr. 16, 1979, 54-46193; Nov. 19, 1979, 54-149770; Dec. 7, 1979, 54-159615; Dec. 17, 1979, 54-163882

Int. Cl.³ A23L *1/00*

U.S. Cl. 426—653 **4 Claims**

1. A powdered emulsifier composition which is prepared by powdering a monoglyceride composition consisting essentially of 65–85% of a saturated fatty acid monoglyceride and 35 to 15% of a cis-type unsaturated fatty acid monoglyceride, said composition having an iodine value of 10 to 40 tempering the powdered monoglyceride composition for more than 30 minutes at a temperature not below 45° C. to a temperature which does not melt the saturated fatty acid monoglyceride; and cooling.

4,363,827

MANUFACTURE OF CONCENTRIC COATINGS FOR FIBER WAVEGUIDES

Bernard R. Eichenbaum, Lilburn, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 23, 1981, Ser. No. 237,537

Int. Cl.³ C02B *5/14*; B05D *5/06, 1/18*

U.S. Cl. 427—8 **5 Claims**

1. Method for the manufacture of coated fiber waveguides comprising the steps of:

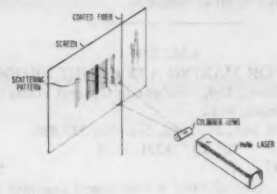
producing a pristine glass fiber,

passing the fiber through a container of coating material and through an exit die in the container,

aligning the fiber within the exit die by respective movement between the fiber and the container,

directing a light beam on the fiber after it exits the exit die, the direction of the light beam at the point of incidence on the fiber being at least approximately transverse to the fiber axis,

detecting the brightness and/or position of at least one caustic surface produced from the portion of the beam that traverses the region of the interface between the fiber and the coating material and exits the fiber from a point more



than 90 degrees removed from the point of incidence of the beam, and

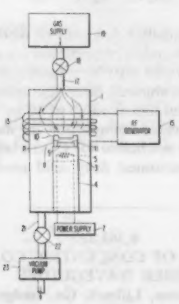
continuously aligning the fiber, with respect to the exit die, in accordance with the brightness and/or position of the caustic surface detected.

4,363,828

METHOD FOR DEPOSITING SILICON FILMS AND RELATED MATERIALS BY A GLOW DISCHARGE IN A DISILAND OR HIGHER ORDER SILANE GAS

Marc H. Brodsky, Mt. Kisco, and Bruce A. Scott, Pleasantville, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,814
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—39 **9 Claims**



1. A method of chemical vapor deposition wherein a silicon semiconducting film is uniformly deposited on a substrate at a high speed, resulting in a deposited film having a smooth surface and having a minimal strain at the film-substrate interface, comprising the steps of:

supplying a silane deposition gas including a silane gas of a higher order than monosilane to a region adjacent a deposition surface of said substrate;

applying an excitation energy to said deposition gas for depositing a layer containing silicon on said deposition surface; and

maintaining said deposition gas at a pressure of less than 0.1 torr during the deposition process.

4,363,829

PROCESS FOR FORMING AN ELECTRICALLY CONDUCTIVE FILM

Osamu Seshimoto; Hirotsugu Nomaguchi; Seiji Horie; Hideo Sato; Masaaki Takimoto, and Kikuo Kubotera, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 27, 1980, Ser. No. 181,556
Claims priority, application Japan, Aug. 27, 1979, 54-109446
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—53.1 **12 Claims**

1. A process for forming an electrically conductive film by exposing to actinic radiation a coating that contains a nonionic electron donating compound and a halogen-substituted polymer having film-forming properties on a substrate, thereby forming a charge transfer complex in said halogen-substituted polymer in said coating.

4,363,830

METHOD OF FORMING TAPERED CONTACT HOLES FOR INTEGRATED CIRCUIT DEVICES

Sheng T. Hsu, Lawrenceville, N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,012
Int. Cl.³ H01L *21/283, 21/316*
U.S. Cl. 427—88 **4 Claims**

1. In a process for manufacturing an MOS device having a first layer of insulating material formed on the entire surface of a semiconductor body of a given conductivity type, a pair of active regions of opposite conductivity type and a channel region therebetween embedded in the body of semiconductor material at the surface thereof, a conductive gate line disposed of the first layer of insulating material and aligned with the channel region, the improved process for forming a contact hole to an active region and to the gate line comprising the steps of:

depositing a second layer of insulating material over the exposed surfaces of the device;

depositing a layer of low temperature flowable passivating glass over the second layer of insulating material;

forming a patterned layer of masking material over the layer of passivating glass to approximately define contact areas over portions of the active regions and over portions of the gate line;

etching those portions of the layer of passivating glass exposed by the patterned masking layer at least through the layer of passivating glass and at most only partially through the second layer of insulating material;

removing the layer of masking material;

heating the structure to the flow temperature of the passivating glass layer for a period of time sufficient to round any sharp edges formed during the etching thereof;

forming a second patterned layer of masking material over the layer of passivating glass to accurately define contact openings within the previously etched areas over portions of the active regions and over portions of the gate line;

etching those exposed portions of the layer of passivating glass exposed by the second patterned masking layer at least through both the layer of passivating glass and the second layer of insulating material and at most only partially through the first layer of insulating material;

removing the second patterned layer of masking material;

etching the structure for a period of time sufficient to remove any remaining portions of the first layer of insulating material exposed in the contact hole and to round any sharp edges formed in the passivating layer and in the second layer of insulating material; and

forming contact lines to the contact openings, in ohmic contact with respective active regions and with the gate line.

4,363,831

PROCESS FOR PRODUCING MAGNETIC POWDER HAVING HIGH COERCIVE FORCE

Shinji Umeki, and Kazuo Takada, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 190,958
Claims priority, application Japan, Oct. 15, 1979, 54-131839
Int. Cl.³ B05D 5/12
U.S. Cl. 427—127 1 Claim

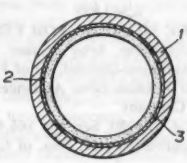
1. A process for producing a magnetic iron oxide powder with at least two surface layers, each layer comprising a cobalt compound, which comprises forming on γ-Fe_2O_3 powder a first surface layer by treating said γ-Fe_2O_3 powder with an aqueous solution of cobalt sulfate, subjecting the resultant single-layered product to an extended heating period in boiling aqueous alkali solution, forming on said single-layered product a second surface layer by treating said single-layered product with an aqueous solution of cobalt sulfate, subjecting the resultant twice-layered product to an extended heating period in boiling aqueous alkali solution, and recovering the at least twice-layered product.

4,363,832

METHOD FOR PROVIDING CERAMIC LINING TO A HOLLOW BODY BY THERMIT REACTION

Osamu Odawara, Sendai, Japan, assignor to Director-General of the Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,583
Claims priority, application Japan, Jan. 16, 1980, 55-3414
Int. Cl.³ B05D 7/22
U.S. Cl. 427—183 10 Claims



1. A method for providing a ceramic lining of layer on the inner surface of a hollow metal body which comprises the steps of

(a) placing a powdery thermit mixture comprising a strongly reductive element and a reducible metal oxide in the hollow space of the hollow body,

(b) rotating the hollow body around an axis so that the powdery thermit mixture is pressed against the inner surface of the hollow body by centrifugal force to form a layer,

(c) igniting the thermit mixture at least at one point of the layer thereof formed on the inner surface of the hollow body while still under the centrifugal force so that the thermit reaction of the thermit mixture takes place and the reducible metal oxide is reduced to a molten metal and the strongly reductive element is oxidized to an oxide which forms an innermost layer of ceramic material with the molten metal forming an intermediate layer between the inner surface of the hollow body and the innermost layer,

(d) degassing the space within the hollow body by means of a vacuum to remove thermit reaction gasses and to remove gasses from the layers, and

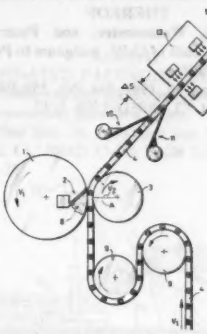
(e) then cooling the hollow body to solidify said intermediate and innermost layers and provide on the inner surface of the hollow body, stratified layers of the metal and the ceramic material.

4,363,833

METHOD AND APPARATUS FOR COATING A POROUS SUBSTRATUM

Cornelis Blaak, Boxmeer, Netherlands, assignor to Stork Brabant B.V., Netherlands

Filed Mar. 24, 1981, Ser. No. 247,140
Claims priority, application Netherlands, Mar. 27, 1980, 8001814
Int. Cl.³ B05D 3/12; B41L 13/00; B05C 11/02
U.S. Cl. 427—211 29 Claims



1. A method of coating a permeable substratum with a viscous substance comprising:

moving the substratum at a given speed;

applying the substance to the moving substrate at an application location;

supporting the substrate against the means applying the substance with support means having a surface which contacts the substratum;

moving the support means so that the surface thereof which contacts the substratum moves at a speed which differs from the given speed of the substratum.

5. The method of claim 1 in which the substratum is moved between the means which applies the substance and the support surface.

8. The method of either of claims 1 or 5, in which the substratum is moved such that a first surface of the substratum contacts the means which applies the substance, and a second surface of the substratum contacts the support means.

9. The method of claim 8, further comprising, after the applying of the substance to the substratum, applying a doctor to the first surface of the substratum and applying a doctor to the second surface of the substratum.

4,363,834

PROCESS FOR PREPARING WETTABLE COMPOSITES FROM INERT ORGANIC POLYMER FIBERS WITH INORGANIC PARTICLES

Scott A. Verzwyvelt, Newbury Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 128,747, Mar. 10, 1980, Pat. No. 4,277,547.
This application Jul. 6, 1981, Ser. No. 280,415
Int. Cl.³ B05D 3/00, 3/02
U.S. Cl. 427—296 3 Claims

1. A method of permanently providing a granular coating of inert inorganic particles onto the surface of chemically inert fibers which form a gas permeable felt whereby said felt will be wettable in aqueous solutions comprising the steps of:

(a) first providing a porous organic felt containing fibers whose surfaces are free of contamination;

(b) applying a uniform coating of inert inorganic particles to the surface of said felt and throughout the interstices of said fibers by vacuum back-filling said felt with a suspension of porous inorganic particles in a carrier fluid; and

(c) heating said particle-coated felt to a temperature slightly less than the melting point of said fibers whereby said fibers will soften and absorb said particles to the said surface thereby providing a permanently attached granular inorganic particle-coated fibrous felt.

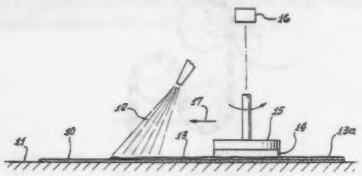
3. A process in accordance with claim 1 wherein said fibers are polypropylene.

4,363,835

SPRAY BUFF REACTANT AND APPLICATION THEREOF

Walter J. Hackett, Westminster, and Peter E. Galena, Huntington Beach, both of Calif., assignors to Purex Corporation, Lakewood, Calif.

Filed Apr. 13, 1981, Ser. No. 253,300
Int. Cl.³ B05D *3/02, 3/12*
U.S. Cl. 427—355 **18 Claims**



1. In the method of producing a toughened, mar-resistant floor film, the steps that include

(a) applying to an already formed floor surface film a liquid solution containing a polymerized film forming agent and a cross-linking ingredient,

(b) and buffing said floor surface film with said solution thereon in moist condition to heat the solution and surface film and produce cross-linking of said agent with the floor surface film to harden said film,

(c) said cross linking ingredient selected from the group that consists essentially of methylated melamine and sodium benzoate.

4,363,836

PRIMING COMPOSITIONS FOR A BASE OF CEMENT MORTAR OR CONCRETE

Naoyuki Sakato, Urawa, and Norio Nakamura, Omiya, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,555
Claims priority, application Japan, Feb. 23, 1980, 55-22076; Feb. 29, 1980, 55-24744
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—393.6 **3 Claims**

1. A method for priming the surface of a base of cement, mortar or concrete which comprises coating the surface with an aqueous priming composition containing, as dissolved in an aqueous medium, a modified polyvinyl alcohol containing, in the molecular chain thereof, monomer units expressed by the formulas

$$-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-;\quad -CH_2-\underset{\displaystyle OCOCH_3}{\underset{|}{CH}}-\quad ;\text{ and }\quad -CH_2-\underset{\displaystyle OR}{\underset{|}{CH}}-,$$

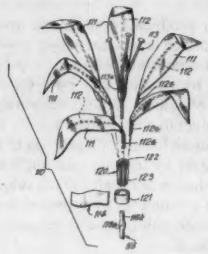
in mole fractions x, y and z, respectively, in which R is an alkyl group having at least 6 carbon atoms, x is a positive number not smaller than 0.60, y is a positive number not exceeding 0.40 and z is a number in the range from 0.0001 to 0.02 inclusive with the proviso that $x+y+z$ is substantially equal to 1, followed by drying.

4,363,837

ARTIFICIAL FLOWER

Henry Weitz, Prosperity House, 11th Floor, 8A-10 Granville Rd., Kowloon, Hong Kong

Filed Oct. 23, 1981, Ser. No. 314,234
Int. Cl.³ A41G *1/00*
U.S. Cl. 428—26 **9 Claims**



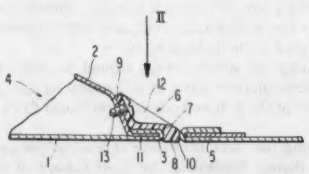
1. An artificial flower comprising a plurality of individual petal-like members of fabric each including a medial stiffening wire secured thereto for simulating a vein and having an end portion projecting from the respective petal-like member, an assembling element having a peripheral surface with substantially parallel grooves extending therealong and opening axially at least at one end and also radially outward for receiving the projecting end portions of the stiffening wires of said petal-like members, and means extending about said assembling element for securing said projecting end portions of the stiffening wires in the respective grooves.

4,363,838

PROTECTIVE EDGE MOLDING FOR VEHICLE PARTS

Adolf Schmidt, Sindelfingen; Arno Jambor, Vaihingen, and Guntram Huber, Aidlingen-Dachtel, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,406
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2927272
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—31 **11 Claims**



1. A protective molding for an edge of a hinged motor vehicle part, characterized in that the molding has a substantially V-shape cross sectional configuration and includes a guide leg terminating along one longitudinal side in an end portion, and a mounting leg for mounting the molding on the vehicle part, the mounting leg being provided along the other longitudinal side of the guide leg, the guide leg defining a contact area adopted to contact an inner surface of the vehicle part adjacent said edge, and in that the end portion of the guide leg curves outwardly with respect to said V-shape configuration of the molding in a hook-shaped adapted to surround the edge of the vehicle part for protecting said edge, and wherein

a portion of the outwardly curved, hook-shaped end portion of the guide leg adapted to surround said edge is tapered.

4,363,839

TRIM STRIP FOR VEHICLES

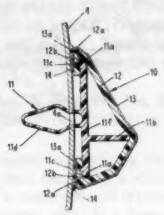
Yutaka Watanabe, Toyoake, and Hirochika Nishio, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 10, 1981, Ser. No. 242,392

Claims priority, application Japan, Mar. 10, 1980, 55-30742[U]

Int. Cl.³ B32B *15/08*; B60R *13/02*

U.S. Cl. 428—31 **8 Claims**



1. A trim strip for attachment to the exterior surface of a vehicle, said trim strip comprising:

(a) an elongated plastic base body having an exterior surface, the lateral cross-sectional shape of the base body defining an interior channel, and opposed base edges defining an opening to said channel and for being disposed proximate said vehicle;

(b) an elongated, flexible, soft plastic element integrally secured to said base body at each of said base edges between said base body and said vehicle surface;

(c) a stainless steel foil bonded to the exterior surface of said base body, said foil having opposed foil edges secured to said respective edges of said base body;

(d) engaging means for securing said base body to said vehicle surface, said engaging means being disposed in said channel and having opposed edges adjacent the interior surface of respective base edges; and

(e) complementary interlocking means on adjacent surfaces of respective base and engaging means edges for securing said engaging means and said base body together and for restricting thermal expansion in a lateral direction of said base body to prevent enlargement of said opening and loosening of said engaging means in said channel.

4,363,840

PACKAGING FILMS, SHEETS AND BLOWN OR MOLDED HOLLOW BODIES

Gilbert Roullet, Tremblay les Gonesse, and Pierre Legrand, Antony, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 10,217, Feb. 8, 1979, abandoned. This application Mar. 3, 1980, Ser. No. 126,649

Claims priority, application France, Feb. 13, 1978, 78 03940

Int. Cl.³ B65D *35/08*; B29C *17/07*; B32B *27/08*

U.S. Cl. 428—35 **8 Claims**

1. Packaging films, sheets, blown or molded hollow bodies consisting essentially of a substrate of thermoplastic material and a water insoluble coating on the substrate consisting essentially of a dispersed phase of polyvinyl alcohol dispersed in a continuous phase of a water insensitive polymer that is incompatible with the polyvinyl alcohol, in which the coating is derived from the coating of the substrate with a composition formed of an aqueous solution of a polyvinyl alcohol containing at least 90% vinyl alcohol moieties and a latex of a water insensitive polymer that is incompatible with the polyvinyl alcohol, in the ratio expressed by weight of dry solids of between 0.4–3 parts by weight polyvinyl alcohol to 1 part by weight latex polymer, in which, until the final stages of drying the coating composition on the substrate, the polymer latex constitutes the dispersed phase in the continuous phase of aqueous solution of polyvinyl alcohol, while inversion takes place during the final stages of drying whereby the polyvinyl alcohol becomes the dispersed phase in the continuous phase of the polymer to provide a polyphase coating.

4,363,841

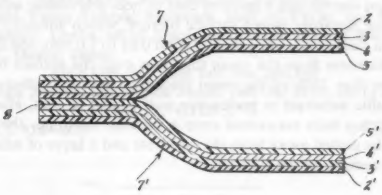
LAMINATED PACKAGING MATERIAL

John E. Snow, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,581

Int. Cl.³ B65D *85/70*; B32B *1/02, 1/04*

U.S. Cl. 428—35 **16 Claims**



1. A laminated packaging material comprising

(a) a transparent film of nylon, polyester, cellophane or polypropylene as an outer surface;

(b) a coextruded laminate of pigmented polyethylene and an ethylene acrylic acid copolymer, said coextruded laminate affixed to said transparent film with the pigmented polyethylene adjacent the transparent film;

(c) a metallic foil affixed to the ethylene acrylic acid copolymer of said coextruded laminate; and

(d) a heat-sealable inner polyolefin containing layer affixed to said metallic foil.

16. A flexible pouch formed by heat sealing two parallel panels of the laminated packaging material of claim **1** along the edges of their respective inner heat-sealable surfaces forming a space therebetween.

4,363,842

ELASTOMERIC PRE-STRETCHED TUBES FOR PROVIDING ELECTRICAL STRESS CONTROL

Paul N. Nelson, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 2, 1981, Ser. No. 239,538

Int. Cl.³ B32B *1/08*; H02G *15/08*

U.S. Cl. 428—36 **10 Claims**

1. An article for use in the splicing and termination of electric power cables comprising an elastomeric tubular member supported in a stretched condition on an easily removable core, said tubular member comprising from about 2.5 to about 25 volume percent carbon black, from about 0.8 to about 3.0 volume percent of platelet-shaped conductive particles, up to about 8.0 volume percent of high permittivity inorganic fillers, up to about 12.0 volume percent of platelet-shaped inorganic dielectric fillers, the balance of said member comprising a compounded non-polar elastomer selected from the group consisting of EPDM and EPM.

4,363,843

SEALS

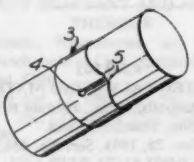
David Crofts, Cirencester, England, assignor to Raychem Limited, London, England

Filed Mar. 11, 1980, Ser. No. 129,198

Claims priority, application United Kingdom, Mar. 20, 1979, 7909832

Int. Cl.[3] B32B *3/02, 33/00*

U.S. Cl. 428—43 10 Claims



1. A removable seal for a metallic substrate which comprises a heat-shrinkable continuous annular band having a tearable region therein and a uniform coat of heat-activatable adhesive on the inwardly facing surface thereof, which adhesive has a mean thickness in the range of from 0.01 to 1.0 mm, and differs in thickness from the mean thickness over the surface by not more than 25% of the mean thickness, and will adhere to a metallic substrate in preference to the band so that, after the band has been recovered onto a metallic substrate, the band can be peeled away from the substrate and a layer of adhesive will remain on the substrate.

4,363,844

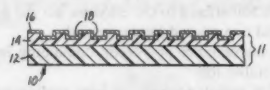
METALLIZED INFORMATION CARRYING DISCS

Terry W. Lewis; Roger J. Anderson, and Donald J. Kerfeld, all of P.O. Box 33427, Saint Paul, Minn. 55133

Filed Sep. 22, 1980, Ser. No. 189,000

Int. Cl.[3] B32B *3/02;* G11B *7/24*

U.S. Cl. 428—65 37 Claims



1. A coded information carrying structure capable of being electronically decoded comprising

(1) a base,

(2) a first layer of an electrically conductive or electromagnetic radiation reflective layer adhered to at least one surface of said base, said layer having coded information in the form of depressions in said layer having been vertically displaced a distance of from 0.03 to 10.0 micrometers, with said first layer having ruptures or necking on the sides of the depressions, and

(3) an insulating or transparent protective layer over said first layer.

4,363,845

SPUN NON-WOVEN FABRICS WITH HIGH DIMENSIONAL STABILITY, AND PROCESSES FOR THEIR PRODUCTION

Ludwig Hartmann, Kaiserlautern, Fed. Rep. of Germany, assignor to Carl Freudenberg, Fed. Rep. of Germany

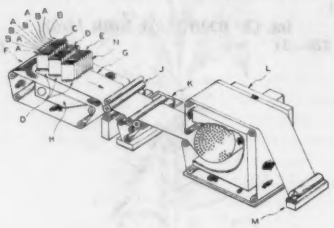
Continuation of Ser. No. 69,921, Aug. 27, 1979, abandoned. This application Apr. 8, 1981, Ser. No. 252,024

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922427

Int. Cl.[3] D04H *1/58*

U.S. Cl. 428—198 19 Claims

1. A non-woven fabric comprising a plurality of superimposed layers of essentially endless uncrimped filaments in an interconnected, tangled relationship, deposited laminarly without the formation of arcs, said layers of filaments comprising both single filaments and filament groups; wherein said filament groups are multifilament strands comprising individual filaments which are disposed, at least at certain segments thereof, parallel to one another, and which individual filaments of said groups have been drawn and cured to a non-tacky state to prevent autogenous bonding; and wherein the parallel filament within the filament groups and the single filaments are bonded together using binders comprising dispersions or powders of polymers or copolymers.



4,363,846

PHOTOMASK AND PHOTOMASK BLANK

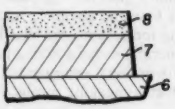
Satoru Kaneki, Sayama, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,343

Claims priority, application Japan, Dec. 22, 1980, 55/180409

Int. Cl.[3] B32B *3/00, 7/00;* G03F *7/00*

U.S. Cl. 428—203 10 Claims



7. A photomask comprising a transparent substrate and a patternized multi-layer masking film provided on the substrate, said multi-layer masking film comprising a layer of chromium and a composite layer of chromium oxide and chromium nitride laminated on said chromium layer.

4,363,847

FLEXIBLE SHEET MATERIAL

Brian Hargreaves, Manchester, and Alan K. Cousens, Cambridge, both of England, assignors to AMFU Limited, Manchester, England

Filed Jul. 1, 1981, Ser. No. 279,611

Claims priority, application United Kingdom, Jul. 4, 1980, 8021923

Int. Cl.[3] B32B *5/16;* D04D *1/08*

U.S. Cl. 428—283 7 Claims

1. Non-asbestos flexible sheet material having a basis of a major portion of fine particles of a chlorite as a non-fibrous charged-layer-silicate mineral and including a minor proportion of organic web-forming fibers, said fine particles and said organic web-forming fibers being bound together with a syn-

thetic rubber; said flexible sheet material being made by a process in which an aqueous slurry of the aforesaid ingredients is progressively dewatered as a layer on a water-permeable conveyor and the dewatered layer is subsequently compressed and dried, said flexible sheet material having said ingredients in the following proportions by dry weight:

silicate mineral	85–95%
organic web-forming fibers	2–15%
synthetic rubber	1–10%

4,363,848

THREE LAYERED FOAM-CONTAINING LAMINATE SUITABLE FOR USE AS AN AUTOMOBILE HEADLINER

Edward C. Le Duc, and John C. Schubert, both of Chippewa Falls, Wis., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 1, 1981, Ser. No. 269,518
Int. Cl.³ B29D *27/04;* B32B *5/18;* B60J *9/00*
U.S. Cl. 428—286 **6 Claims**

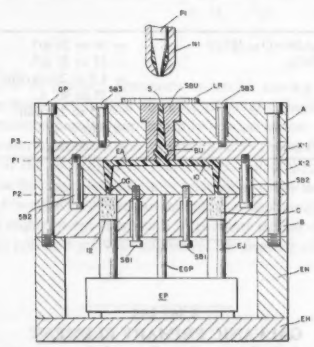
1. A decorative laminate comprising the following layers in order: (1) polypropylene fabric, (2) a solid layer comprising a physical mixture of a copolymer of styrene and maleic anhydride and polypropylene, and (3) a foam of a copolymer of styrene and maleic anhydride.

4,363,849

FOAMED THERMOPLASTIC RESIN CORK HAVING A NATURAL CORK-LIKE APPEARANCE AND A METHOD OF INJECTION MOLDING THE CORK

Gary V. Paisley, Atlanta, Ga.; J. George Altschuler, Montreal, Canada, and Josef Rommler, Ulm, Fed. Rep. of Germany, assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Oct. 30, 1980, Ser. No. 202,156
Int. Cl.³ B29D *27/00;* B29F *1/04*
U.S. Cl. 428—318.8 **24 Claims**



1. A method for making a closure made of a thermoplastic resinous material and having a natural cork-like appearance which comprises,

providing a mold cavity with an entrance orifice, said mold cavity having the shape of said closure with predetermined internal dimensions, the wall of said mold cavity opposite the entrance orifice being sufficiently spaced from said entrance orifice to permit the formation of a strand of thermoplastic resinous material therein,

rapidly injection, at high pressure an expandable thermoplastic resinous material in an amount less than that required to fill the mold cavity and in the form of a strand, into said mold cavity, said strand collecting in said cavity as randomly-oriented coils, the pressure produced in said mold cavity by said injection temporarily pressurizing said cavity, thereby retarding the expansion of the thermoplastic resinous material sufficiently to allow completion of the injection of said thermoplastic resinous material, while maintaining the integrity of the strand configuration,

simultaneously with said temporary pressurization, gradually removing a portion of the air displaced by said injected thermoplastic resinous material through controlled minimum venting of said mold cavity, thereby expanding the coiled resinous material in a controlled manner through a continuation of said minimum venting to fill said mold cavity, the walls of said mold cavity being maintained at a temperature sufficiently cool to cause the resinous material to solidify into a rigid, outer skin when it contacts said walls, whereby the coalesence of said coils during expansion creates randomly-oriented grain lines in the surface of said closure which resembles the appearance of natural cork.

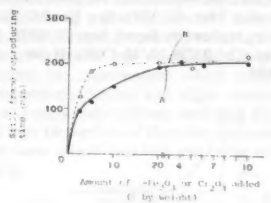
24. The product formed by the process of claims 1, 2 or 21.

4,363,850

MAGNETIC RECORDING MEDIUM

Masaaki Yasui; Takeshi Matsuura, both of Kyoto, and Seiji Watatani, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 24, 1980, Ser. No. 200,133
Claims priority, application Japan, Oct. 24, 1979, 54/137352
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—329 **2 Claims**



1. A magnetic recording medium comprising a base material and a magnetic layer provided on the surface of said base material, said magnetic layer consisting essentially of magnetic particles and α-Fe_2O_3 granular particles dispersed in a binder consisting essentially of a cellulose resin and a polyurethane resin, said α-Fe_2O_3 particles being present in an amount of 0.5 to 10 percent by weight based on the weight of the magnetic particles, and having an average particle size of 0.5 to 2.0μ.

4,363,851

METAL-DEPOSITED PAPER AND METHOD FOR PRODUCTION THEREOF

Noritoshi Mishina, Sowa; Yutaka Hirota, Mitaka, and Satoshi Nakamura, Ohmiya, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,583
Claims priority, application Japan, Mar. 31, 1980, 55-42526
Int. Cl.³ B05D *1/36, 7/24;* B32B *15/08, 27/10*
U.S. Cl. 428—333 **29 Claims**

1. A metal-deposited paper comprising

(i) a paper substrate;

(ii) a thin continuous resin coating (a) of a film-forming resin having good adhesion to a metal on one surface of the paper substrate, the coating (a) having been formed by coating an aqueous dispersion of the film-forming resin on the one surface of the paper substrate;

(iii) a metal film vacuum-deposited on the resin coating (a); and

(iv) a thin continuous coating (b) of polyvinyl alcohol on the other surface of the paper substrate, the coating (b) having

been formed by coating an aqueous solution of the polyvinyl alcohol on the other surface of the paper substrate.

4,363,852

COATED PHOSPHATE GLASS

Yuji Nakajima, Tokyo, and Tetsuro Izumitani, Hino, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,286
Claims priority, application Japan, Nov. 20, 1978, 53-143163
Int. Cl.³ B32B *17/06*
U.S. Cl. 428—432 6 Claims

1. A water-soluble phosphate glass having coated directly on the surface thereof a layer of a fluoride selected from the group consisting of ThF_4 or CeF_3.

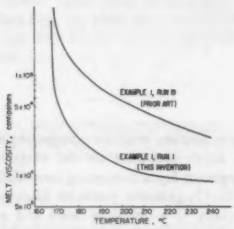
6. A laser glass comprising a water-soluble phosphate glass having coated directly on the surface thereof a layer of MgF_2 and wherein said MgF_2 layer is coated with a layer of one or more members selected from the group consisting of SiO_2, ZrO_2 and TiO_2.

4,363,853

HOT-MELT POLYESTER

Kazuyoshi Imamura; Norio Akimoto, and Shozo Awaya, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 74,479, Sep. 11, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,226
Claims priority, application Japan, Sep. 20, 1978, 53-115391
Int. Cl.³ B32B *27/36;* C08G *63/16*
U.S. Cl. 428—480 14 Claims



1. A hot-melt polyester having: (a) acid components consisting essentially of: (I) terephthalic acid monomer units, (II) succinic acid monomer units, (III) glutaric acid monomer units and (IV) a member selected from the group consisting of isophthalic acid monomer units, monomer units of an unsubstituted straight chain aliphatic dicarboxylic acid having 6 to 20 carbon atoms and a combination thereof, the proportions of the components (I), (II), (III) and (IV) satisfying the relationships as represented by the following formulae:

the component (I)=40 to 80 mole % based on the total amount of the components (I), (II), (III) and (IV); the components (II)+(III)=2 to 50 mole % based on the total amounts of the components (I), (II), (III) and (IV); the components (IV)=5 to 50 mole % based on the total amount of the components (I), (II), (III) and (IV); and the molar ratio of the component (II) to the component (III)=1/9 to 9/1,

and (b)

a glycol component comprising monomer units of at least one straight chain or branched alkylene glycol having 2 to 10 carbon atoms.

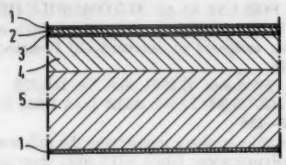
6. An article comprising two adherends bound together with the hot-melt polyester of any one of claims 1, 2 or 3.

4,363,854

METHOD FOR MANUFACTURING WORKPIECES HAVING ADAPTATION FACES CAPABLE OF WITHSTANDING EXTREMELY HIGH SURFACE PRESSURES AND TEMPERATURES, AND PRODUCT PRODUCED THEREBY

Erich Hodes, Rosbach; Michael Steeg, Mainz, and Peter Lippok, Wiesbaden-Biebrich, all of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 160,069
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1979, 2926708
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—632 6 Claims



1. As a finished article of manufacture, a slide bearing comprising a laminate having a base member on the working surface of which there is a slide layer of a friction alloy and, electroplated on the working surface of said slide layer, an electro-deposited adaptation layer which is capable of withstanding extremely high surface pressures and high temperatures and which is capable of preventing dry friction and abrasion between metal surfaces, said adaptation layer comprising an oxide of the metal molybdenum and said adaptation layer having discontinuous surface areas which form a uniformly micro-fissured mosaic-like pattern, said adaptation layer produced according to the following listed electrolytic data, under the stated conditions:

$(NH_4)_6Mo_7O_{24}.4H_2O$	= 10 to 20 g/l
NH_4NO_3	= 15 to 30 g/l
i	= 1.5 to 2.0 A/dm^2
T	= 35 to 40° C.
t	= 1.5 to 2.0 min
pH	= 5 to 6
Reaction	= cathodic.

4,363,855

GALVANIC PRIMARY ELEMENT

Aügüt Winsel, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

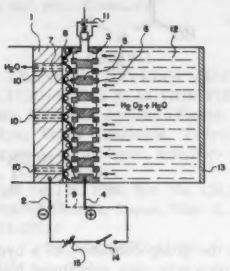
Filed Jul. 18, 1980, Ser. No. 169,960
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930099
Int. Cl.³ H01M *12/02*
U.S. Cl. 429—101 14 Claims

1. A galvanic primary element having a negative light metal electrode and having hydrogen peroxide as the cathode depolarizer, comprising:

a gas diffusion electrode positioned in front of the light metal electrode,

said gas diffusion electrode having a catalytically active working layer and having inactive cover layers positioned on both sides of the working layer,

the cover layers having a smaller pore diameter than the working layer, and



the hydrogen peroxide being present in aqueous solution of about 3 to 15 percent fixated in a polyurethane gel.

4,363,856

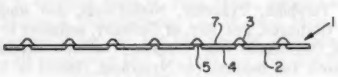
BATTERY SEPARATOR MATERIAL

John F. Waterhouse, Northampton, Mass., assignor to Texon Inc., South Hadley, Mass.

Division of Ser. No. 164,588, Jun. 30, 1980, abandoned. This application Mar. 13, 1981, Ser. No. 243,616

Int. Cl.[3] H01M *2/16*

U.S. Cl. 429—143 1 Claim



1. A roll of battery separator material having one side thereof embossed to form a plurality of longitudinally extending indentations parallel and laterally spaced across the width of said material and on the opposing side thereof having a plurality of ribs of polyolefin material extruded thereon, each of said ribs having a substantially triangular cross section and positioned in alignment with an indentation and having an apex in mating engagement therewith to prevent lateral slipping of laps of the roll and provide alignment for feeding off the roll.

4,363,857

LAMINATED METAL-PLASTIC BATTERY GRID

Renard E. Mix, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1981, Ser. No. 311,921

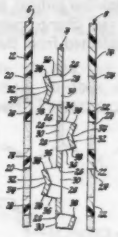
Int. Cl.[3] H01M *4/73*

U.S. Cl. 429—234 7 Claims

1. A laminated support for the active material of an electric storage battery plate comprising:

a perforate metal sheet having a plurality of integral, protuberant, anchoring tabs projecting outwardly from a face of said sheet, and a plurality of perforations from whence said tabs were formed;

at least one polymeric grid contiguously overlying a major portion of said face, said grid comprising a network of intersecting grid wires defining a plurality of openings therebetween; and



said tabs projecting into said openings and engaging said grid wires to secure said grid to said face.

4,363,858

PHOTOCONDUCTIVE BELT JOINT

Johannes C. A. Vercoulen, Venlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Filed May 24, 1976, Ser. No. 689,359

Claims priority, application Netherlands, May 28, 1975, 7506264

Int. Cl.[3] G03G *5/00*

U.S. Cl. 430—56 4 Claims

1. In a photoconductive belt comprising a support of flexible sheet material having a photoconductive layer thereon, said belt having a joint therein formed by meeting extremities of a length or lengths thereof and an adhesive strip applied over said extremities, the improvement which comprises said extremities respectively having end edges mainly fitting with each other and each said extremity including lips extending at least in part over the surface of the other extremity, all said lips being at the same side of said belt and being covered by said adhesive strip.

4,363,859

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Masaomi Sasaki, Kawasaki, and Kyoji Tsutsui, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

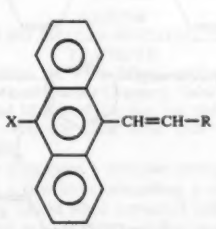
Filed Oct. 13, 1978, Ser. No. 951,301

Claims priority, application Japan, Oct. 22, 1977, 52-126946

Int. Cl.[3] G03G *5/10*

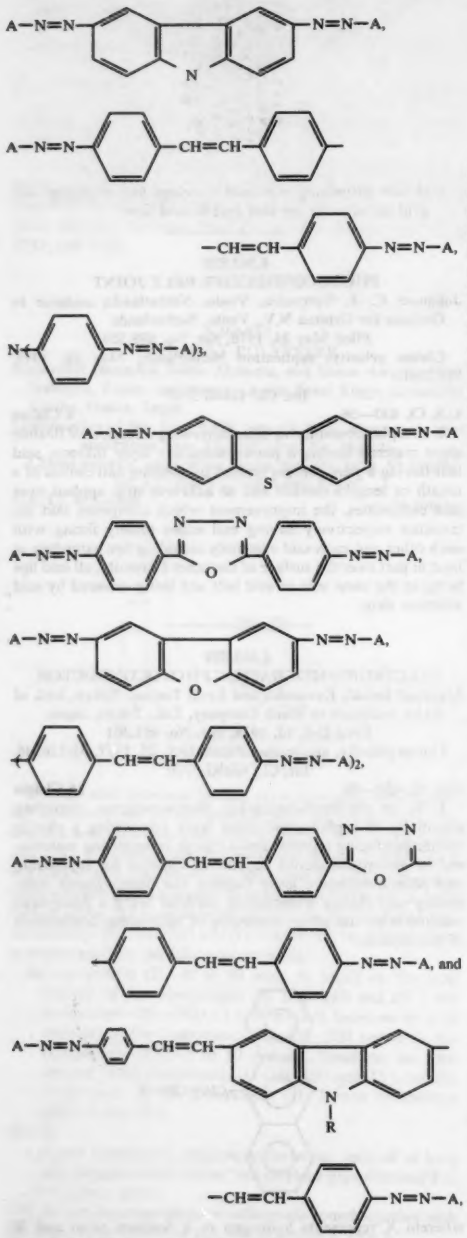
U.S. Cl. 430—59 14 Claims

1. In an electrophotographic photoconductor consisting essentially of a photoconductive layer comprising a charge carrier producing pigment and a charge transporting material, and an electroconductive supporting material for supporting said photoconductive layer thereon, the improvement comprising said charge transporting material being a compound selected from the group consisting of anthracene compounds of the formula:

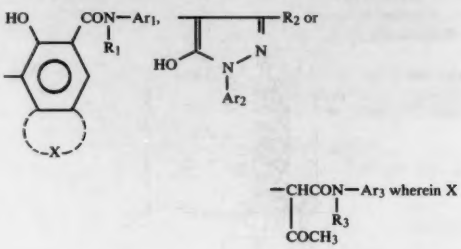


wherein X represents hydrogen or a halogen atom and R represents an unsubstituted phenyl radical, a substituted phenyl

radical having a halogen substituent, a cyano substituent, a lower dialkyl amino substituent with one to four carbon atoms, a lower alkoxy substituent with one to five carbon atoms, and a nitro substituent, a naphthyl radical, an anthryl radical, and a carbazoyl radical, and said charge carrier producing pigment being an azo pigment selected from the group consisting of



wherein substituent A of the formulas is



is selected from the group consisting of a hydrocarbon aromatic ring, a heterocyclic ring, substituted hydrocarbon aromatic rings and substituted heterocyclic rings; Ar_1 is selected from the group consisting of a hydrocarbon aromatic ring, a heterocyclic ring, substituted hydrocarbon aromatic and substituted heterocyclic rings; Ar_2 and Ar_3 are each selected from the group consisting of a hydrocarbon aromatic ring and substituted hydrocarbon aromatic rings; R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, phenyl, substituted lower alkyl and substituted phenyl and R_2 is selected from the group consisting of lower alkyl, carboxyl and ester derivatives of said carboxyl group, the weight ratio of said charge transporting material in said layer ranging from 10 to 60% and the weight ratio of said charge carrier producing pigment in said layer ranging from 50% to 1%.

4,363,860

PHOTOCONDUCTIVE POLYIMIDE COATING UPON A SUBSTRATE

Jan van Turnhout, Pynacker, Netherlands, and Ramesh C. Ahuja, Gottingen, Fed. Rep. of Germany, assignors to Nederlandsch Organisatie voor Toegepast-Natuurvetenschappelijk Onderzoek Ten Behoeve van Nyserheid, Handel en Verkeer, The Hague, Netherlands

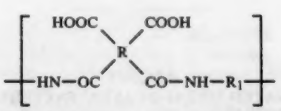
Continuation of Ser. No. 129,169, Mar. 7, 1980, abandoned, which is a division of Ser. No. 931,919, Aug. 8, 1978. This application Jun. 8, 1981, Ser. No. 271,223

Claims priority, application Netherlands, Aug. 9, 1977, 7708786

Int. Cl.[3] **G03G** *5/07*

U.S. Cl. 430—83 **1 Claim**

1. A conductive substrate coated with a photo-conductive polyimide coating containing as a photosensitizer a member selected from the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone said coating produced by a process comprising the steps of:



wherein:

R is a tetravalent organic radical containing at least two carbon atoms, no more than two carbonyl groups being bonded to any one carbon atom of R,

R_1 represents a divalent organic radical having at least two carbon atoms, which is bonded to two nitrogen atoms, the said nitrogen atoms being attached to different carbon atoms of said divalent radical, and R, R_1 or both contain at least one aromatic ring of six carbon atoms, as well as a member of the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone, wherein about one molecule of TNF or the corresponding tetrani-

tro compound is present per one monomeric unit of the polyamic acid, and

(2) heating the coated substrate at a temperature not exceeding 150° C. to form on said substrate a polyimide coating containing said photosensitizer.

4,363,861

TONER TRANSFER DEVELOPMENT USING ALTERNATING ELECTRIC FIELD

Shunji Nakamura, Kawasaki; Junichiro Kanbe, Tokyo; Tsutomu Toyono, Tokyo; Tohru Takahashi, Tokyo, and Yasuyuki Tamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,913

Claims priority, application Japan, Mar. 6, 1979, 54-25922; Mar. 6, 1979, 54-25923

Int. Cl.³ G03G *13/08*

U.S. Cl. 430—97 **14 Claims**

1. A developing method using developer transition from a developer supporting member spaced from a latent image bearing member, comprising the steps of supplying a developer formed in substantially spherical particles to the surface of a developer supporting member, maintaining the developer supporting member in an opposed relationship to the latent image bearing member to provide a clearance between said developer on said developer supporting member and the surface of said latent image bearing member, and applying an alternating electric field to said developer supporting member to cause reciprocating motion of the spherical developer particles between said latent image bearing member and said developer supporting member thereby effecting the image development.

4,363,862

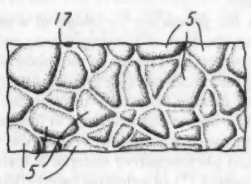
PRESSURE-FIXING APPARATUS AND METHOD

Norman L. Giorgini, West St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Continuation of Ser. No. 144,700, Apr. 28, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,786

Int. Cl.³ G03G *13/20, 15/20*

U.S. Cl. 430—98 **8 Claims**



1. A method of fixing pressure-fixable imaging powder to the surface of a receptor comprising the steps of:

(a) forming areas of unfixed pressure-fixable imaging powder on one surface of a receptor; and

(b) passing said receptor between first and second pressure members to fix said areas of unfixed pressure-fixable imaging powder to said first surface of said receptor, said pressure members being rotated so that said receptor is transported therethrough; wherein said pressure members have longitudinal axes, and wherein said pressure members are disposed to contact each other along a narrow nip, and wherein said first pressure member has an irregular, non-compliant surface comprising a plurality of randomly sized domed projections that contact said areas of unfixed pressure-fixable imaging powder on said first surface of said receptor, and wherein said second pressure member has a compliant surface that contacts the second, unimaged surface of said receptor.

4,363,863

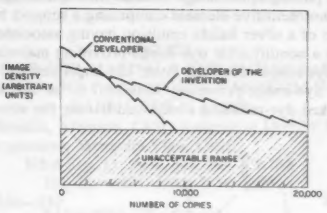
LIQUID NEGATIVE DEVELOPER COMPOSITIONS FOR ELECTROSTATIC COPYING CONTAINING POLYMERIC CHARGE CONTROL AGENT

Norman T. Veillette, Nashua, N.H., and Charles H. C. Pian, Lexington, Mass., assignors to Nashua Corporation, Nashua, N.H.

Continuation of Ser. No. 103,544, Dec. 13, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 249,159

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—115 **27 Claims**

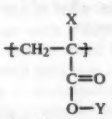


1. A non-amphoteric liquid negative developer composition of improved depletion properties for developing an electrostatic latent image on the surface of an image bearing member, said composition comprising:

a organic liquid carrier having a resistivity greater then 10^9 ohm-cm and a dielectric constant less than 3;

thermoplastic resin particles dispersed within said carrier, said particles comprising an intimate mixture of:

a vinyl polymeric latex, insoluble in said carrier, and including a major amount of monomer units selected from the group consisting of:



where X is H or CH_3 and Y is C_nH_{2n+1}, where $1 \leqq n \leqq 6$;

a pigment; and

a charge control agent, substantially insoluble in the carrier, which imparts a negative charge to the composition and is present in association with the vinyl polymeric latex, said charge control agent consisting essentially of a copolymer of 10–50 parts of a lower alkyl (C_2–C_6) vinyl ether and 50–90 parts of a vinyl chloride, the amount of said copolymer included in said composition being substantially less than the amount of said latex.

4,363,864

COLLOID RELIEF IMAGES BY OXIDIZED DEVELOPER TRANSFER

Robert L. Rutledge, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 10, 1978, Ser. No. 904,546

Int. Cl.³ G03C *5/54, 1/48*

U.S. Cl. 430—202 **7 Claims**

1. An article comprising a substrate having coated on one surface thereof a first layer comprising a colloidal material capable of being tanned when contacted with oxidized silver halide developers, and overlying said first layer a second layer comprising a photographic silver halide emulsion, said emulsion containing substituted gelatin therein, said substituted

gelatin being substantially resistant to tanning when contacted by said oxidized silver halide developers.

4,363,865

IMIDO METHYL BLOCKED PHOTOGRAPHIC DYES AND DYE RELEASING COMPOUNDS

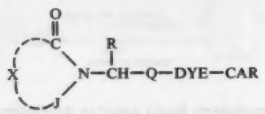
James A. Reczek, and Thomas R. Welter, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,348
Int. Cl.³ G03C *7/00, 5/54*
U.S. Cl. 430—223 **36 Claims**

1. In a photographic image transfer film unit comprising:

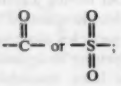
(a) a photosensitive element comprising a support bearing a layer of a silver halide emulsion having associated therewith a nondiffusible dye-image-providing material, and

(b) a dye-image-receiving layer, the improvement wherein the dye-image-providing material is an imidomethyl blocked dye-releasing compound having the structure:



wherein:

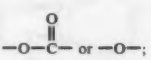
J represents



X represents the atoms to complete a heterocyclic nucleus containing at least one 5- or 6-membered ring;

R represents hydrogen, alkyl of 1 to 4 carbon atoms or aryl of 6 to 12 carbon atoms;

Q represents



—Q—DYE represents the residue of a diffusible photographic dye; and

CAR is a ballasted carrier moiety from which the dye moiety is released as a function of silver halide development.

4,363,866

RECORDING MATERIALS

Stuart C. Rennison, Hadleigh, and Ronald J. Stacey, Colchester, both of England, assignors to Bedford Limited, London, England

Continuation-in-part of Ser. No. 99,748, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 87,567, Oct. 23, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 254,083
Claims priority, application United Kingdom, Dec. 11, 1978, 47955/78; Aug. 6, 1979, 7927349
Int. Cl.³ G03C *5/18, 5/00*
U.S. Cl. 430—290 **11 Claims**

1. A process for forming an image in a vesicular imaging material, wherein the vesicular imaging material comprises a plastics vehicle applied to a carrier sheet or film, said plastics vehicle comprising a thermoplastics component and dispersed uniformly therein a sensitising agent which is non-reactive with said thermoplastics component and releases a vesicle-forming gas by decomposition upon exposure to light, said sensitising agent present in an amount of at least 5% by weight based upon the weight of said thermoplastics component, said thermoplastics component being softenable upon heating to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein, said plastics vehicle also containing at least one sulphone or sulphonamide the sulphonamide having a maximum molecular weight of 253 wherein the sulphone has the general formula

$$R^1—SO_2—R^2$$

in which R^1 and R^2 are selected from aromatic radicals and the sulphonamide has the general formula:

$$R^3—SO_2—NR^4R^5$$

in which R^3 is a hydrocarbon radical and R^4 and R^5 are each either hydrogen atoms or hydrocarbon radicals, the sulphone or sulphonamide being present in an amount in the range of 1 to 100% by weight based upon the weight of the thermoplastics component,

said image being formed in the plastics vehicle by exposing the vesicular imaging material to a light image thereby causing the sensitising agent to release gas in the light-struck areas and heating the vesicular imaging material to soften the thermoplastics component whereby a recorded image is formed therein by the expansion into imaging vesicles of gas released by the sensitising agent, said sulphone or sulphonamide being present in the plastics vehicle in an effective amount whereby the recorded image has a density ratio of 106:94 exceeding 0.80.

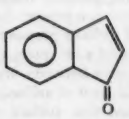
4,363,867

PROCESS OF IMAGING USING AN INDANONE CONTAINING MATERIAL

Edwin A. Chandross, Berkeley Heights, and Ray L. Hartless, Lopatcong Township, Warren County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1981, Ser. No. 259,534
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—302 **8 Claims**

1. A process for producing an image in a photosensitive body comprising the step of causing actinic radiation to be incident on a photosensitive region of said photosensitive body and maintaining said incident exposures for a time sufficient to cause a chemical change essentially through the thickness of said photosensitive region characterized in that said photosensitive body comprises a photosensitive material contacting a substrate, and said photosensitive material is formed from the monomers comprising (1) an indenone based compound represented by the formula



and (2) a methacrylate compound represented by the formula

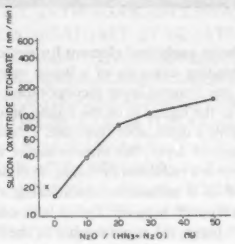
where X is chosen from the group consisting of nitrile, alkyl ester, and carboxylic acid functional groups.

4,363,868

PROCESS OF PRODUCING SEMICONDUCTOR DEVICES BY FORMING A SILICON OXYNITRIDE LAYER BY A PLASMA CVD TECHNIQUE WHICH IS EMPLOYED IN A SELECTIVE OXIDATION PROCESS

Kanetake Takasaki, Tokyo, and Mamoru Maeda, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1980, Ser. No. 219,494
Claims priority, application Japan, Dec. 26, 1979, 54-170030
Int. Cl.³ H01L *21/318*
U.S. Cl. 430—314 4 Claims



1. A process for producing a semiconductor device comprising the steps of:

forming a silicon oxynitride layer on a semiconductor substrate by a plasma chemical vapor deposition method;

selectively etching said silicon oxynitride layer to expose a portion of said semiconductor substrate;

oxidizing said portion of said semiconductor substrate to form an oxide layer, and

removing the remaining silicon oxynitride layer by an etchant comprising a solution of hydrofluoric acid.

4,363,869

PHOTOGRAPHIC DEVELOPING PROCESS

Robert E. Hutchinson, Jr., 6714 Hanover Ave., Richmond, Va. 23226

Continuation of Ser. No. 179,910, Aug. 19, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,616
Int. Cl.³ G03C *5/30*
U.S. Cl. 430—427 1 Claim

1. A process for the development of photographic material initially containing silver halide to produce a silver image, said photographic material having been imagewise exposed to radiation, said process comprising:

(a) uniformly treating said photographic material with a first aqueous solution having a pH between 7.5 and 12 and comprising

Component	Weight Ratio
N—methyl-p-aminophenol sulfate	1.9–2.1
sodium sulfite	46–54
hydroquinone	4–8

said first solution containing between about 56 and 60 grams of said components per quart,

(b) separating said photographic material from said first solution,

(c) treating said photographic material uniformly with a second aqueous solution having a pH between 7.5 and 12 and comprising

Component	Weight Ratio
borax	40–60

-continued

Component	Weight Ratio
sodium sulfite	90–110

said second solution containing between about 130 and 170 grams of said components per quart,

(d) separating said photographic material from said second solution,

(e) fixing,

(f) washing, and

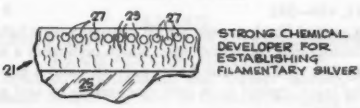
(g) drying said photographic material.

4,363,870

METHOD FOR MAKING A REFLECTIVE LASER RECORDING AND DATA STORAGE MEDIUM WITH A DARK UNDERLAYER

Eric W. Bouldin, Atherton, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Filed Sep. 11, 1981, Ser. No. 301,203
Int. Cl.³ G03C *1/02, 5/54, 5/26*
U.S. Cl. 430—510 4 Claims



1. A method of making a reflective laser recording and optical data storage medium comprising,

forming a layer of silver precipitating nuclei from a portion of the silver halide within a fine-grained, photosensitive silver-halide emulsion layer of uniform thickness, disposed on a substrate, the nuclei layer having a major surface distal to the substrate with a depthwise nuclei gradient with greatest nuclei density distal to the substrate,

contacting said nucleated emulsion layer with a monobath solution comprising a silver-halide solvent and a low-activity silver-reducing agent of sufficient concentration to cause another portion of silver halide to form soluble silver ion complexes and be transported by diffusion transfer to said precipitating nuclei, where said silver ion complexes are reduced to non-filamentary silver particles to form a reflective surface layer in said emulsion layer without causing reduction of silver ions in the solution,

contacting said nucleated and monobath-treated emulsion layer with a strong chemical developer whereby remaining silver halide is converted into black filamentary silver particles to form a light absorptive underlayer in said emulsion layer.

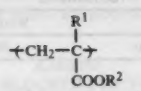
4,363,871

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL

Toshiaki Shibue; Koichi Nagayasu; Tohru Kobayashi, and Kouji Tokitou, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,994
Claims priority, application Japan, May 13, 1980, 55-62317
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—523 16 Claims

1. A multi-layer light-sensitive silver halide photographic material comprising a support and a light-sensitive silver halide emulsion layer, said support having a front side and a back side, which further comprises, in at least one of the front and back sides thereof, at least one light-insensitive layer containing a high polymer having at least 20% by weight of a repeating unit represented by the formula (I):



(I)

wherein R^1 represents a hydrogen atom or a methyl group, and R^2 represents a straight chain alkyl group having 12 to 24 carbon atoms.

4,363,872

COATED FILM BASES, PHOTOGRAPHIC FILMS DERIVED FROM THE BASES AND PROCESSES FOR THEIR PRODUCTION

Cyril J. Ealding, Chester, England, assignor to Imperial Chemical Industries Limited, London, England

PCT No. PCT/GB80/00043, § 371 Date Feb. 24, 1981, § 102(e) Date Feb. 24, 1981, PCT Pub. No. WO81/02640, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 12, 1980, Ser. No. 243,939
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—532 8 Claims

1. A coated film base suitable for coating with a light-sensitive photographic emulsion layer which comprises a self-supporting film of a synthetic linear polyester and a continuous subbing layer applied to at least one surface of said self-supporting film

wherein the subbing layer consists essentially of:

(1) a water-insoluble copolymer of:

(a) 50 to 90 mole % of comonomer selected from the alkyl esters of acrylic and methacrylic acids wherein the alkyl group contains up to ten carbon atoms;

(b) 9 to 20 mole % of comonomer selected from vinyl sulphonic, allyl sulphonic, methallyl sulphonic and p-styrene sulphonic acids and the salts thereof;

(c) 0 to 20 mole % of comonomer selected from itaconic acid, itaconic anhydride and half esters of itaconic acid;

(d) 0 to 25 mole % of glycidyl acrylate or glycidyl methacrylate; and

(2) 0 to 25% by weight, based on the weight of the copolymer, of a cross-linking agent which comprises a condensation product of an amine with formaldehyde.

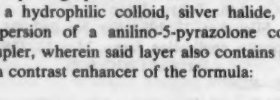
4,363,873

PHOTOGRAPHIC CONTRAST ENHANCERS

John R. Boon, Woodbury, and Gregory J. Wagner, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 14, 1981, Ser. No. 301,980
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—546 5 Claims

1. A color photographic silver halide emulsion in a layer comprising a hydrophilic colloid, silver halide, and an oil droplet dispersion of a anilino-5-pyrazolone color photographic coupler, wherein said layer also contains an effective amount of a contrast enhancer of the formula:



wherein R is an alkyl group of 4 to 20 carbon atoms.

4,363,874

MULTILAYER ANALYTICAL ELEMENT HAVING AN IMPERMEABLE RADIATION NONDIFFUSING REFLECTING LAYER

Alfred C. Greenquist, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 7, 1981, Ser. No. 290,938
Int. Cl.³ G01N *33/52, 33/54*
U.S. Cl. 435—7 29 Claims

1. In a multilayer analytical element for detecting a ligand in or the ligand binding capacity of a liquid sample of the type having at least one reagent layer incorporating reagents which are responsive to the ligand in or the ligand binding capacity of the sample to give a detectable response, a radiation reflecting layer, and a support layer, the improvement wherein at least one reagent layer is a radiation diffusing layer and the radiation reflecting layer is a radiation nondiffusing reflecting layer which is (a) interposed between the at least one reagent layer and the support layer; (b) impermeable to the ligand, reagents of the at least one reagent layer, and products of their interreaction; and (c) inert to the ligand, reagents of the at least one reagent layer, and products of their interreaction.

4,363,875

PROCESS FOR PRODUCING L-TRYPTOPHAN, AND A PURE CULTURE OF A MICROORGANISM STRAIN USED IN SAID PROCESS

Takeo Akashiba, Musashino; Akira Nakayama, Kawasaki, and Atsuhiko Murata, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jun. 9, 1981, Ser. No. 271,925
Claims priority, application Japan, Jun. 10, 1980, 55/77130
Int. Cl.³ C12P *13/22;* C12N *1/20;* C12R *1/125*
U.S. Cl. 435—108 6 Claims

1. In a process for producing L-tryptophan which comprises cultivating an L-tryptophan-producing mutant of *Bacillus subtilis* under aerobic conditions in a nutrient culture medium containing anthranilic acid, a carbon source, a nitrogen source and a mineral source, and recovering the resultant L-tryptophan from the culture broth, the improvement wherein the mutant is a strain resistant to 5-fluorotryptophan and 8-azaguanine.

4,363,876

MICROMONOSPORA CULTURE

Istvan Gado; Antonia Jekkel nee Bokany; Gyuml/o/ rgy Szvoboda; Miklos Jarai; Sandor Piukovich, all of Budapest, and Sandor Istvan, Szentendre, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Jan. 30, 1980, Ser. No. 116,915
Claims priority, application Hungary, Feb. 6, 1979, CI 1911
Int. Cl.³ C12N *1/20;* C12R *1/29*
U.S. Cl. 435—253 2 Claims

1. A substantially biologically pure culture of the *Micromonospora rosea* species having the capability of producing sisomicin upon cultivation in an aqueous nutrient medium.

4,363,877

RECOMBINANT DNA TRANSFER VECTORS

Howard M. Goodman; John Shine, and Peter H. Seeburg, all of San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 836,218, Sep. 23, 1977, abandoned. This application Apr. 19, 1978, Ser. No. 897,710

Int. Cl.³ C12N *1/00*

U.S. Cl. 435—317 8 Claims

1. A recombinant DNA transfer vector comprising codons for human chorionic somatomammotropin comprising the nucleotide sequence:

5'-G $GCL_{24}ATM_{25}GAK_{26}ACL_{27}TAK_{28}CAJ_{29}GAJ_{30}TTK_{31}GAJ_{32}GAJ_{33}ACL_{34}TAK_{35}ATM_{36}CCL_{37}AAJ_{38}GAK_{39}CAJ_{40}AAJ_{41}TAK_{42}QR_{43}S_{43}TTK_{44}X_{45}TY_{45}CAK_{46}GAK_{47}QR_{48}S_{48}CAJ_{49}ACL_{50}QR_{51}S_{51}TTK_{52}TGK_{53}TTK_{54}QR_{55}S_{55}GAK_{56}QR_{57}S_{57}ATM_{58}CCL_{59}ACL_{60}CCL_{61}QR_{62}S_{62}AAK_{63}ATGGAJ_{65}GAJ_{66}ACL_{67}CAJ_{68}CAJ_{69}AAJ_{70}QR_{71}S_{71}AAK_{72}X_{73}TY_{73}GAJ_{74}X_{75}TY_{75}X_{76}TY_{76}W_{77}GZ_{77}ATM_{78}QR_{79}S_{79}X_{80}TY_{80}X_{81}TY_{81}X_{82}TY_{82}ATM_{83}GAJ_{84}QR_{85}S_{85}TGGX_{87}TY_{87}GAJ_{88}CCL_{89}GTL_{90}W_{91}GZ_{91}TTK_{92}X_{93}TY_{93}W_{94}GZ_{94}QR_{95}S_{95}ATGTTK_{97}GCL_{98}AAK_{99}AAK_{100}X_{101}TY_{101}GTL_{102}TAK_{103}GAK_{104}ACL_{105}QR_{106}S_{106}GAK_{107}QR_{108}S_{108}GAK_{109}GAK_{110}TAK_{111}CAK_{112}X_{113}TY_{113}X_{114}TY_{114}AAJ_{115}GAK_{116}X_{117}TY_{117}GAJ_{118}GAJ_{119}GGL_{120}ATM_{121}CAJ_{122}ACL_{123}X_{124}TY_{124}ATGGGL_{126}W_{127}GZ_{127}X_{128}TY_{128}GAJ_{129}GAK_{130}GGL_{131}QR_{132}S_{132}W_{133}GZ_{133}W_{134}GZ_{134}ACL_{135}GGL_{136}CAJ_{137}ATM_{138}X_{139}TY_{139}AAJ_{140}CAJ_{141}ACL_{142}TAK_{143}QR_{144}S_{144}AAJ_{145}TTK_{146}GAK_{147}ACL_{148}AAK_{149}QR_{150}S_{150}CAK_{151}AAK_{152}CAK_{153}GAK_{154}GCL_{155}X_{156}TY_{156}X_{157}TY_{157}AAJ_{158}AAK_{159}TAK_{160}GGL_{161}X_{162}TY_{162}X_{163}TY_{163}TAK_{164}TGK_{165}TTK_{166}W_{167}GZ_{167}AAJ_{168}GAK_{169}ATGGAK_{171}AAJ_{172}GTL_{173}GAJ_{174}ACL_{175}TTK_{176}X_{177}TY_{177}W_{178}GZ_{178}ATGGTL_{180}CAJ_{181}TGK_{182}W_{183}GZ_{183}QR_{184}S_{184}GTL_{185}GAJ_{186}GGL_{187}QR_{188}S_{188}TGK_{189}GGL_{190}TTK_{191}TAGGTGCCCGAGTAGCATCCTGTGACCCCTCCCCAGTGCCTCTCCTGGCC-3'$

wherein

A is deoxyadenyl,

G is deoxyguanyl,

C is deoxycytosyl,

T is thymidyl,

J is A or G;

K is T or C;

L is A,T,C or G;

M is A, C or T;

X is T or C, if the succeeding Y is A or G, and C if the succeeding Y is C or T;

Y is A, G, C or T, if the preceding X is C, and A or G if the preceding X is T;

W is C or A, if the succeeding Z is G or A, and C if the succeeding Z is C or T;

Z is A, G, C or T, if the preceding W is C, and A or G if the preceding W is A;

QR is TC, if the succeeding S is A, G, C or T, and AG if the succeeding S is T or C;

S is A, G, C or T, if the preceding QR is TC, and T or C if the preceding QR is AG and subscript numerals refer to the amino acid position in human growth hormone, for which the nucleotide sequence corresponds, according to the genetic code, the amino acid positions being numbered from the amino end.

4,363,878

ALKALI- AND HEAT-RESISTANT INORGANIC FIBER

Osamu Yamamoto; Keishin Takehara, and Yutaka Yasiro, all of Chiba, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Mar. 9, 1981, Ser. No. 241,692

Claims priority, application Japan, Mar. 17, 1980, 55-33840

Int. Cl.³ C03C *13/00*

U.S. Cl. 501—36 2 Claims

1. An alkali- and heat-resistant inorganic fiber consisting essentially of

	% by weight
SiO_2	40–50
CaO	0–10
MgO	15–25
Fe_2O_3 + FeO	0–10
Al_2O_3	5–15
MnO	2–15

provided that the total amount of CaO, Fe_2O_3, FeO and MnO is about 20% by weight and having an optional fiber-forming temperature of about 1410°–1460° C.

4,363,879

ALKALINE FLUOROBORATE IN FLUOROPHOSPHATE GLASS FREE OF BERYLLIUM

Heinz Broemer, Hermannstein, and Norbert Meinert, Solms-Albshause, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

PCT No. PCT/DE79/00149, § 371 Date Aug. 20, 1980, § 102(e) Date Aug. 18, 1980, PCT Pub. No. WO80/01274, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 19, 1979, Ser. No. 204,369

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854936

Int. Cl.³ C03C *3/16, 3/18*

U.S. Cl. 501—44 5 Claims

1. A fluorophosphate glass free of beryllium and having a refractive index n_e between 1.40 and 1.46, an Abbe value v_e between 85 and 94 and a high positive anomalous partial dispersion $+\Delta v_e$ between 19 and 28 produced by a process comprising melting a mixture consisting essentially of the following components:

(a) methaphosphate(s):

about 7 to 15% by weight $Al(PO_3)_3$ alone, or

about 0 to 15% by weight $Al(PO_3)_3$ and 0 to 11% by weight of an alkali metaphosphate, or

about 0 to 15% by weight ($Al(PO_3)_3$ and about 0 to 5% by weight of at least one alkaline earth methaphosphate, wherein the sum of all metaphosphates is between about 7 and 15% by weight;

(b) fluorides:

about 0 to 6% by weight LiF

about 0 to 12% by weight KHF_2

about 3 to 12% by weight MgF_2

about 9 to 28% by weight CaF_2

about 6 to 16% by weight SrF_2

about 4 to 13% by weight BaF_2

about 22 to 31% by weight AlF_3

wherein the proportion of the alkaline earth fluoride amounts to between about 23 and 52% by weight; and

(c) alkaline fluoborate:

about 5 to 29% by weight $NaBF_4$, wherein boron ions are introduced by means of the complex fluoborate to prevent formation of B_2O_3.

4. A fluorophosphate glass as defined in claim 1, wherein the glass is produced by the process steps comprising:

(a) heating the intermixed mixture to a temperature between 700° and 800° C.;

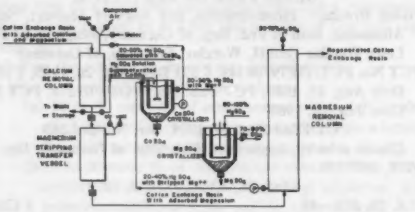
(b) refining the melt at a temperature between 900° and 1000° C. for a period of time between 8 and 25 minutes;
(c) homogenizing the melt at a temperature between 900° and 1000° C. within a period of time between 5 and 15 mintues;
(d) reducing the temperature to a pouring temperature between 575° and 650° C.; and
(e) pouring into a casting mold preheated to approximately 320° C.

4,363,880

METHOD OF SELECTIVELY REMOVING ADSORBED CALCIUM AND MAGNESIUM FROM CATION EXCHANGE RESINS

Solon G. Whitney, Bartow, and William R. Erickson, Lakeland, both of Fla., assignors to American Petro Mart, Inc., Bartow, Fla.

Filed Jun. 22, 1981, Ser. No. 275,648
Int. Cl.³ B01J 49/00
U.S. Cl. 521—26 8 Claims



8. The method of selectively removing calcium from cation exchange resin beads containing adsorbed calcium and magnesium ions, comprising the steps of:
(a) passing an aqueous sulfuric acid (H_2SO_4) solution through a bed of said resin beads, said solution having an H_2SO_4 concentration of from 20 to 50% by weight, being saturated with calcium sulfate ($CaSO_4$), and containing magnesium sulfate ($MgSO_4$) at a concentration substantially below saturation;
(b) continuing to pass said solution through said resin bed until the adsorbed magnesium is in ion exchange equilibrium with the magnesium in solution while simultaneously exchanging the hydrogen ions in solution for the adsorbed calcium ions, said solution becoming supersaturated with calcium sulfate;
(c) passing the said supersaturated solution to a crystallizer and precipitating $CaSO_4$ therein;
(d) recycling the H_2SO_4 solution in said crystallizer after said precipitation of $CaSO_4$ therefrom through said resin bed for further removal of adsorbed calcium, said recycling being continued until at least 75% of the adsorbed calcium has been removed while leaving the adsorbed magnesium in said beads;
(e) next eluting the magnesium from said resin beads from which the calcium has been removed by passing an aqueous sulfuric acid solution therethrough having an H_2SO_4 concentration of from 20 to 70% by weight to obtain an eluate containing $MgSO_4$ at below saturation; and
(f) thereafter precipitating the magnesium from said eluate by increasing the H_2SO_4 concentration thereof to a concentration above the saturation solubility of the $MgSO_4$.

4,363,881

METHOD OF MAKING UNIFORMLY-SIZED EXPANDABLE POLYMERIC PARTICLES

Stuart B. Smith, Conyers, Ga., assignor to Cellofoam A.G., Lucerne, Switzerland

Continuation-in-part of Ser. No. 210,566, Nov. 26, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,306
Int. Cl.³ C08J 9/18, 9/20
U.S. Cl. 521—56 15 Claims

1. In a method of making expandable polymeric particles by way of suspension polymerization, the improvement of achieving expandable polymeric particles falling within a desired size range comprising the steps of:
(a) interrupting said suspension polymerization at the completion of a first stage at which time the polymerization of the polymerizable material is not more than 80% complete yet forms particles having sufficient physical integrity to withstand size classification;
(b) classifying said particles by size to yield partially polymerized particles falling within a desired size range;
(c) completing the polymerization of said desirably-sized partially polymerized particles during a second stage suspension polymerization; and
(d) impregnating the desirably-sized particles with blowing agent.

4,363,882

METHOD FOR PRODUCING FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS WITH BLENDS OF DIBROMONEOPENTYL GLYCOL AND FLAME RETARDANT PLASTICIZER

Gunter H. Wegner, Charlotte, N.C., assignor to Reeves Brothers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 29,340, Apr. 12, 1979, Pat. No. 4,275,171. This application Jun. 19, 1981, Ser. No. 275,584
The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.
Int. Cl.³ C08G 18/14
U.S. Cl. 521—107 17 Claims

1. In a process for producing flexible polyether or polyester polyurethane foams having a porosity in the range from about 0.5 to about 10 cubic feet per minute, in which a polyfunctional isocyanate is reacted with a polyol in the presence of a small amount of a blowing agent and a catalytic amount of a polymerization catalyst, the improvement which comprises:
incorporating as a separate reactant into the reaction mixture prior to polymerization in excess of about 20 to about 60 percent by weight of a mixture of dibromoneopentyl glycol or its esters and flame retardant plasticizer, based on the weight of polyol used in the polymerization reaction, which manner of incorporating said mixture results in substantially more flame retardant foams without adversely affecting the physical characteristics of said foams.

4,363,883

STRUCTURAL MATERIALS AND COMPONENTS

John Gagliani, and Raymond Lee, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 12, 1980, Ser. No. 186,563
Int. Cl.³ C08J 9/32
U.S. Cl. 521—122 10 Claims

1. A blocking material or the like which comprises a polymide foam having uniformly distributed therethrough glass microballoons of a size and in an amount which is effective to increase the screw withdrawal effectiveness of the polyimide, said polyimide being a copolyimide containing two primary

diamines, one of said diamines being heterocyclic and having nitrogen in the ring and the other of said diamines being a para-

or meta- substituted aromatic diamine which is free of aliphatic moieties.

4,363,884

FRICTION MATERIAL

Osao Ogiwara, Hanyu, Japan, assignor to Akebono Brake Industry Company, Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,788

Claims priority, application Japan, Mar. 17, 1980, 55-33581; Mar. 17, 1981, 55-33582

Int. Cl.[3] C08L *63/00*

U.S. Cl. 523—156 2 Claims

1. In a non-asbestos friction material comprising 5–60 wt.% of ferrous metal particle and/or ferrous metal fiber, 0.5–15 wt.% of organic dust selected from the group consisting of cashew dust and rubber dust, 2–20 wt.% of inorganic substance powder selected from the group consisting of barium sulfate, calcium sulfate, calcium silicate and calcium carbonate, 5–25 wt.% of lubricant selected from the group consisting of graphite and molybdenum disulfide, 0–20 wt.% of metal powder selected from the group consisting of copper, brass and aluminum, 0–20 wt.% of fibrous reinforcement material comprising at least one material selected from the group consisting of organic and inorganic fibers other than ferrous metal fibers, and 3–15 wt.% of thermosetting resin binder selected from the group consisting of phenol, melamine and epoxide, the friction material is characterized in containing at least 0.01 wt.% of at least one material selected from the group consisting of boric acid, borate, phosphoric acid and phosphate as an anticorrosive component.

4,363,885

PROPYLENE POLYMER COMPOSITION USEFUL FOR BUMPERS

Osamu Fukui, Toyonaka; Yoshiro Umemoto, Nagoya; Tsugumi Sanmiya, Toyota; Yutaka Sano, Kishiwada, and Kazuyoshi Tanaka, Sakai, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi and Toyota Jidosha Kigyo Kabushiki Kaisha, Aichi, both of, Japan

Filed Jun. 24, 1981, Ser. No. 276,972

Claims priority, application Japan, Sep. 22, 1980, 55/130748

Int. Cl.[3] C08K *3/34;* C08L *53/00*

U.S. Cl. 523—212 11 Claims

1. A propylene polymer composition useful for bumpers, comprising

(A) 55 to 65% by weight of at least one crystalline ethylene-propylene block copolymer in which the content of the polymerized ethylene is in the range of from 5 to 10% by weight, in which the polypropylene component has a fraction thereof insoluble in boiling n-heptane, in an amount of 97% or more based on the weight of said polypropylene component, in which a fraction thereof soluble in p-xylene at room temperature, has an intrinsic viscosity of from 3 to 4 determined in decahydronaphthalene at a temperature of 135° C. and which has a melt flow index of from 2 to 10;

(B) 30 to 35% by weight of at least one amorphous ethylene-propylene copolymer having an intrinsic viscosity of from 2.0 to 3.5 determined in decahydronaphthalene at a temperature of 135° C., and a Mooney viscosity ML_{1+4} of from 40 to 100 determined at a temperature of 100° C., and;

(C) 5 to 15% by weight of talc in the form of fine particles having an average size of from 0.5 to 5 microns.

4,363,886

PREPARATION OF AMPHOTERIC WATER-IN-OIL SELF-INVERTING POLYMER EMULSION

Stanley A. Lipowski, Livingston, and John J. Miskel, Jr., Mendham, both of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 84,986, Oct. 15, 1979, Pat. No. 4,330,450. This application Sep. 4, 1981, Ser. No. 299,619

Int. Cl.[3] C08L *27/06, 29/02, 31/02, 39/08*

U.S. Cl. 523—336 9 Claims

1. A method of preparing an amphoteric water-in-oil self-inverting polymer emulsion comprising

(A) forming a water-in-oil emulsion of

(1) from about 10 to about 50 parts by weight of a monomer mixture selected from the group consisting of

(a) from about 30 to about 99 parts by weight of a water soluble nonionic vinyl monomer and from about 1 to about 70 parts by weight of a water soluble amphoteric vinyl monomer to form an amphoteric copolymer, and

(b) from about 30 to 98 parts by weight of a water soluble nonionic vinyl monomer, from about 1 to about 35 parts by weight of a water soluble anionic vinyl monomer and from about 1 to about 35 parts by weight of a water soluble cationic vinyl monomer to form an amphoteric terpolymer,

(2) from about 10 to about 50 parts by weight of water,

(3) from about 5 to about 50 parts by weight of a hydrophobic liquid,

(4) from about 2 to about 25 parts by weight of a water-in-oil emulsifying agent, and

(5) an effective amount of a free radical yielding initiator to polymerize the monomer mixture,

(B) polymerizing the monomer mixture under free radical polymerizing conditions to form a water-in-oil emulsion which contains finely dispersed particles of the amphoteric polymer, and

(C) adding to the water in oil emulsion from about 1 to about 15 parts by weight of an inverting surfactant.

4,363,887

SOLVENT RESIN EMULSION ENAMEL COMPOSITION

Gus W. Leep, Elgin, Ill., assignor to Seymour of Sycamore, Inc., Sycamore, Ill.

Filed Jun. 11, 1981, Ser. No. 272,509

Int. Cl.[3] C08L *23/00, 63/00, 67/02, 75/06*

U.S. Cl. 523—402 9 Claims

1. A water-in-oil emulsion enamel composition for a substrate to which the composition is applied comprising: a continuous oil phase including an organic solvent soluble resin capable of forming a coating on the substrate and an evaporable solvent for said resin; water dispersed in said oil phase; an effective amount of an emulsifier system having a hydrophile-lipophile balance of from two to six; a polar pigment dispersed in said composition; and an effective amount of a titanium

derived coupling agent as a pigment dispersant, said pigment dispersant being included within said emulsifier system whereby substantially no loss of gloss of said enamel composition is experienced after said enamel composition has dried and cured to form said coating on said substrate.

4,363,888

BEAD POLYMERIZATION PROCESS

Geoffrey Willison, Cleveland, and John C. W. Hodge, Northallerton, both of England, assignors to Tioxide Group Limited, Cleveland, England

Filed Apr. 24, 1981, Ser. No. 257,130

Claims priority, application United Kingdom, May 9, 1980, 8015374

Int. Cl.³ C08J 3/26

U.S. Cl. 523—502 10 Claims

1. A process for the preparation of rigid beads formed from cross-linked polyester resin comprising forming an oil-in-water or a water-in-oil-in-water emulsion in which the oil phase contains an unsaturated polyester resin and an unsaturated organic monomer to provide said cross-linking; heating the emulsion to a temperature of at least 45° C. and thereafter introducing into the heated emulsion a polymerisation initiator, and promoter system if not already present, thereby initiating cross-linking of the resin to form an aqueous suspension of rigid beads of cross-linked polyester resin.

4,363,889

ANTI-CORROSIVE COATING COMPOSITION AND PROCESS FOR FORMATION OF ANTI-CORROSIVE COATINGS

Minoru Hoshino, Yokohama; Tosio Shinohara, Fujisawa; Hiroyuki Tanabe, Yokohama; Tooru Taki, Yamato, and Shunsuke Nakayama, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Oct. 28, 1980, Ser. No. 201,606

Claims priority, application Japan, Dec. 19, 1979, 54-165087; Dec. 20, 1979, 54-166205

Int. Cl.³ C08K 3/40; C08L 67/00

U.S. Cl. 523—513 7 Claims

1. An anti-corrosive coating composition comprising 100 parts by weight of an unsaturated polyester resin, 10 to 70 parts by weight of glass flake having an average particle size of 100 to 400 microns and an average thickness of 0.5 to 5 microns, 10 to 150 parts by weight of at least one scaly anti-corrosive metal pigment selected from the group consisting of lead pigment and zinc pigment, a member selected from the group consisting of a mixture of 0.1–1.0 parts by weight of a ketone peroxide and 0.5–2.0 parts by weight of a hydroperoxide, a mixture of 0.1–1.0 parts by weight of a ketone peroxide and 0.5–2.0 parts by weight of a peroxyester and a mixture of 0.1–1.0 parts by weight of said ketone peroxide, 0.5–2.0 parts by weight of said hydroperoxide and 0.5–2.0 parts by weight of said peroxyester.

4,363,890

PROCESS FOR PRODUCING FLAME RETARDANT POLYAMIDE MOLDING RESIN CONTAINING MELAMINE CYANURATE

Hiroshi Ohshita, and Tadao Tsutsumi, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 138,690, Apr. 9, 1980. This application Mar. 9, 1981, Ser. No. 240,576

Claims priority, application Japan, Apr. 12, 1979, 54-44616; Apr. 12, 1979, 54-44617; Apr. 12, 1979, 54-44618; Apr. 12, 1979, 54-170338

Int. Cl.³ C08K 5/04, 5/34; C08L 77/00

U.S. Cl. 524—101 4 Claims

1. A method for preparing a flame retardant polyamide molding resin, containing melamine cyanurate as a flame retardant agent, which comprises separately melt-blending melamine and cyanuric acid with the polyamide, melt-blending both polyamide blends with each other in such an amount that the amounts of melamine and cyanuric acid are equimolar in the ultimate blend of the polyamide molding resin, and thereby converting melamine and cyanuric acid to melamine cyanurate at a conversion of substantially 100%.

4,363,891

GLYCERYL MONOSTEARATE PLASTIC LUBRICANTS

Marvin Rosen, Williamsport, and Larry K. Hall, Cogan Station, both of Pa., assignors to Glyco Inc., Williamsport, Pa.

Filed May 14, 1981, Ser. No. 263,733

Int. Cl.³ C08K 5/10

U.S. Cl. 524—317 10 Claims

1. A method for improving early color and long-term heat stability under dynamic processing conditions of a rigid plastic material selected from the group consisting of polyvinylchloride, acrylonitrile-butadiene-styrene copolymer and polypropylene which comprises adding to said material a glyceryl monostearate lubricant containing less than 4% glycerine.

4,363,892

THERMOPLASTIC COPOLYESTER ELASTOMERS MODIFIED WITH SALTS OF PHENOLIC COMPOUNDS

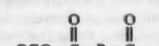
Albert L. Shain, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1982, Ser. No. 355,169

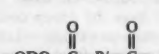
Int. Cl.³ C08K 5/05, 5/13

U.S. Cl. 524—327 9 Claims

1. A thermoplastic copolyester elastomer composition comprising (A) a copolyester consisting essentially of a multiplicity of long-chain ester units and short-chain ester units joined through ester linkages, said long-chain ester units selected from the group consisting of units represented by the formula (Ia), formula (Ib) and combinations thereof

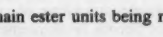


(Ia)



(Ib)

and said short-chain ester units being represented by formula (II)



(II)

where G is a divalent radical remaining after the removal of hydroxyl groups from at least one long-chain glycol having a melting point of less than about 55° C. and a number average molecular weight of about 400–4000, R is a divalent radical remaining after the removal of carboxyl groups from at least one dicarboxylic acid having a molecular weight less than about 300, R' is a divalent radical remaining after the removal of carboxyl groups from dimer acid, D is a divalent radical remaining after the removal of hydroxyl groups from at least one aliphatic diol having a molecular weight less than about 250, with the proviso that at least about 70 mole percent of the D radicals are either ethylene radicals or 1,4-butylene radicals and at least about 70 mole percent of the R radicals are 1,4-phenylene radicals, said short-chain ester units being present in an amount of about 15–95 percent by weight of said copolyester; and (B) about 0.1–10 percent by weight, based on the weight of the total composition, of at least one alkali metal salt of a phenolic compound having a $pK_a25°$ greater than 5 and an equivalent weight of less than about 300 per phenolic hydroxyl group.

4,363,893

SHOE POLISH

David Hersh, 8599 Venice Blvd., Los Angeles, Calif. 90034

Filed Jul. 27, 1981, Ser. No. 287,528
Int. Cl.[3] C08K 5/05
U.S. Cl. 524—376 9 Claims

1. A composition comprising:
about 15% to about 25% by weight acrylic resin dispersion;
about 6% to about 10% butyl cellosolve; and
the balance deionized water.

4,363,894

GLASS REINFORCED POLYAMIDE COMPOSITIONS HAVING IMPROVED IMPACT STRENGTHS

Jean-Louis Locatelli, Vienne, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,471
Claims priority, application France, Dec. 10, 1979, 79 30651
Int. Cl.[3] C08K 3/40
U.S. Cl. 524—494 15 Claims

1. A composition of matter, comprising (i) a polyamide resin, (ii) a reinforcing amount of glass fibers therefor, and (iii) an impact strength increasing amount of a (meth)acrylic compound having the structural formula:

$$(CH_2{=}CR{-}CO{-}A_n{-}X$$

wherein R is hydrogen or methyl, n is an integer equal to 2, 3 or 4, A is the linkage —O— or —NH— and X is an organic radical of valency n selected from the group consisting of linear or branched chain alkylene radical having from 1 to 20 carbon atoms, such alkylene radical comprising one or more chain-interrupting oxygen bridges, one or more hydroxyl groups or one or more of both said oxygen bridges and hydroxyl groups, an aralkylene radical wherein the aryl moiety contains from 6 to 10 carbon atoms and the alkylene moiety is as defined above, such aralkylene radical comprising one or more alkylene chain-interrupting oxygen bridges, and a triazino heterocycle.

4,363,895

SOLUTIONS, WHICH CAN BE SHAPED, FROM MIXTURES OF CELLULOSE AND POLYAMIDE-IMIDE, AND SHAPED ARTICLES OBTAINED

Pierre Chion, Bron; Jacques Menault, Charbonnieres-les-Bains, and Henry Rodier, Sainte-Foy-les-Lyon, all of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Mar. 16, 1981, Ser. No. 244,135
Claims priority, application France, Mar. 14, 1980, 80 06069
Int. Cl.[3] C08L 79/08; C08G 73/14; C08L 1/02; D01F 8/02
U.S. Cl. 525—54.21 20 Claims

1. Shapable polymer solution comprising
(A) cellulose having a degree of polymerization of at least 200
(B) polyamide-imide
(C) dimethyl sulphoxide, and
(D) formaldehyde,
the weight ratio of cellulose/polyamide-imide being between about 0.05 and about 1, the weight ratio of formaldehyde/cellulose being between about 0.2 and about 2 and the total polymer concentration being between about 6 and about 25% by weight.

13. Fibers, filaments and yarns based on cellulose and polyamide-imide, wherein the weight ratio of cellulose/polyamide-imide is between 0.05 and 1, and each polymer is in the form of fibrils whose axis is substantially oriented along the axis of the fiber, the fibrils being intermingled, and wherein at least part of the cellulose macromolecules are involved in a 3-dimensional crystal lattice characteristic of cellulose II.

4,363,896

COMPOSITION WITH LATENT REACTIVE CATALYST-#4

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 109,448, Jan. 4, 1980, abandoned. This application Jul. 28, 1981, Ser. No. 286,394
Int. Cl.[3] C08L 63/00, 37/00, 61/78
U.S. Cl. 525—110 18 Claims

1. A liquid thermosetting high solids coating composition which (i) cures, at least in part, by reaction between an aminealdehyde compound and hydroxyl functionality on a film-forming component, which hydroxyl functionality is generated in situ during cure of said composition, (ii) is adapted for low temperature bake applications, (iii) contains greater than about 55% by weight of nonvolatile solids, and (iv) exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a film-forming compolymer bearing pendent epoxy functionality, having a number average molecular weight ($\overline{M}_n$) of between about 1,500 and about 10,000 and a glass transition temperature (T_g) of between about −25° C. and about 70° C., said copolymer consisting of between about 10 and about 30 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality and between about 90 and about 70 weight percent of other monoethylenically unsaturated monomers;

(B) a latent reactive catalyst comprising the reaction product of (i) a bifunctional compolymer bearing hydroxyl functionality and pendant epoxy functionality, having a number average molecular weight ($\overline{M}_n$) of between about 1,500 and about 10,000 and a glass transition temperature (T_g) of between about −25° C. and about 70° C., said copolymer being prepared from (a) between about 1 and about 25 weight percent of monoethylenically unsaturated monomers bearing glycidyl functionality, (b) between about 10 and about 29 weight percent of monoethylenically unsaturated monomers bearing hydroxyl functionality, and

(c) between about 65 and about 89 weight percent of other monoethylenically unsaturated monomers; and (ii) a sulfonic acid having the formula

wherein R is selected from linear or branched alkyl groups and aryl groups, said bifunctional copolymer bearing pendant epoxy functionality and said sulfonic acid being reacted in such amounts that there are between about 0.3 and about 1 acid groups per epoxy in the reaction mixture;

(C) an amine-aldehyde crosslinking agent; and

(D) up to 45 weight percent of hydroxy functional additive having a number average molecular weight ($\overline{M}_n$) of between 150 and about 6,000,

said latent reactive catalyst being included in said composition in an amount ranging from between about 1 and about 5 weight percent, and said amine-aldehyde crosslinking agent being included in said composition in an amount ranging from about 15 to about 45 weight percent, said weight percent being based on the total weight of (A), (B), (C) and (D).

4,363,897

THERMALLY REVERSIBLE COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Binnur Günesin, Uniontown; Gary R. Hamed, Akron; Jung W. Kang, Clinton, and Donald N. Schulz, Hartville, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 132,737, Mar. 24, 1980, Pat. No. 4,307,210. This application Sep. 18, 1981, Ser. No. 303,213
Int. Cl.³ C08F *222/38*
U.S. Cl. 525—195 3 Claims

1. A process for improving the green strength of styrene-butadiene rubber comprising the step of:

compounding with said styrene-butadiene rubber a thermally reversible copolymer comprising:

from about 0.5 to about 11 percent by weight of an N-(alkoxymethyl)acrylamide;

from about 10 to about 90 percent by weight of a diene compound;

from about 0 to about 90 percent by weight of a monomer containing a vinyl group; and

at least one equivalent mole of a metal ion to two equivalent moles of said N-(alkoxymethyl)acrylamide.

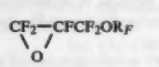
4,363,898

PERFLUORODIGLYCIDYL ETHERS

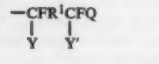
Carl G. Krespan, and Thomas R. Darling, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1981, Ser. No. 250,907
Int. Cl.³ C08G *65/22*
U.S. Cl. 525—404 9 Claims

1. A homopolymer of a perfluoroglycidylether of the formula

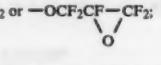


wherein R_F is:

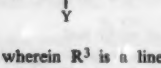


(i)

wherein R^1 is a carbon-carbon bond or a linear or branched perfluoroalkylene group of 1 to 12 carbon atoms;

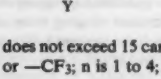
Q is $-OCF_2CF{=}CF_2$ or  ;

Y and Y' are —F or $-CF_3$, provided that only one of Y and Y' can be $-CF_3$; or



(ii)

wherein R^3 is a linear or branched perfluoroalkylene group of carbon content such that the moiety



does not exceed 15 carbon atoms; Y, independently, is —F or $-CF_3$; n is 1 to 4; and Q is as defined above.

4,363,899

PROCESS FOR CROSS-LINKING POLYESTER SERIES RESIN

Isao Shirahata, Chigasaki; Nobu Kitamura, Hiratsuka; Nobuyuki Nakamura, Fujisawa, and Hisako Hori, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,690
Claims priority, application Japan, Dec. 18, 1980, 55-179527
Int. Cl.³ C08G *63/76*; C08F *283/00*
U.S. Cl. 525—437 19 Claims

1. A process for cross-linking a polyester series resin characterized by forming into a predetermined shape a resin composition comprising a substantially linear polyester series resin and a copper source material selected from the group consisting of copper powder and copper compounds and heating said composition to a temperature above the melting point of said resin in an oxygen-containing atmosphere to cross-link said polyester resin.

4,363,900

PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE FINE POWDER

Tetsuo Shimizu, Osaka, and Shun Koizumi, Kawanishi, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Jun. 1, 1981, Ser. No. 268,835
Claims priority, application Japan, May 31, 1980, 55-72930
Int. Cl.³ C08F *114/18*
U.S. Cl. 526—83 6 Claims

1. A process for preparing polytetrafluoroethylene fine powder by polymerization of tetrafluoroethylene in an aqueous medium comprising a water-soluble polymerization initiator and a non-telogenic surfactant capable of keeping colloidal polytetrafluoroethylene particles at a sufficiently stable state, the process comprising effecting the polymerization at a temperature of 55° to 120° C., and incorporating into the aqueous medium a polymerization retarder selected from the group consisting of aromatic compounds having at least one substituent group selected from the group consisting of hydroxy and amino, and quinone compounds, said retarder having a water-solubility of not less than 2.5×10^{-6} mol/liter at 25° C., a boiling point of from 94° to 241° C. and not having any reinitiation ability after its addition or chain transfer to a free radical in the polymerization system, said retarder being incorporated into the aqueous medium in an amount of 0.7 to 20 ppm at the stage after the initiation of the polymerization and after the consumption of at least 10% by weight of tetrafluoroethylene to be polymerized but before the consumption of 85% by weight of tetrafluoroethylene to be polymerized so that the polymerization time is extended at least 130% in comparison with that of the case wherein the polymerization is effected under the same conditions as above except not using the polymerization retarder, whereby colloidal polytetrafluoroethylene particles, of which the core portions occupying 50% by weight of the total weight of the finally produced particles have a specific gravity of not more than 2.210, of which the specific gravity of the finally produced particles is not more than that of the core portions and of which the average particle size is 0.1 to 0.5 μm, are obtained.

4,363,901

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Kazutsune Kikuta; Masami Tachibana, both of Ichiharashi, and Akihiro Sato, Chibaken, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,778
Claims priority, application Japan, Feb. 15, 1980, 55/17249
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—97 10 Claims

1. A process for producing α-olefin polymers which comprises:

milling (A) a trivalent metal halide selected from the group consisting of aluminum trichloride (anhydrous), ferric chloride (anhydrous) and aluminum tribromide (anhydrous), together with

(B) a divalent metal compound selected from the group consisting of

$Mg(OH)_2$, $Ca(OH)_2$, $Zn(OH)_2$, $Mn(OH)_2$, MgO, CaO, ZnO, MnO, $MgAl_2O_4$, Mg_2SiO_4, Mg_6MnO_8, $MgCO_3$, $MnCO_3$, $MgCO_3.CaCO_3$, $SnCl_2.2H_2O$, $MgCl_2.nH_2O$ (n=1∼6), $NiCl_2.6H_2O$, $MnCl_2.4H_2O$, $KMgCl_3.6H_2O$, $MgCl_2.nMg(OH)_2.mH_2O$ (n=1∼3, m=1∼6), $3MgO.2SiO_2.2H_2O$, $3MgCO_3.Mg(OH)_2.3H_2O$ and $Mg_6Al_2(OH)_{1.4}CO_3.4H_2O$,

in a proportion of 0.1 to 20 mols of (B) to one mol of (A), and

reacting the resulting mixture of (A) with (B) at a temperature of room temperature (20° C.) to 500° C.,

to obtain a solid product (I);

reacting with this solid product (I),

(ED) an electron donor selected from the group consisting of alcohols, ethers, esters, aldehydes, fatty acids, ketones, nitriles, amines, amides, urea, thiourea, isocyanates, azo compounds, phosphines, phosphites, phosphinites, thioethers, thioalcohols and polysiloxanes, and

(EA) an electron acceptor selected from the group consisting of (EA_1) aluminum chloride compounds expressed by the formula R_nAlCl_{3-n} (wherein $0 \leqq n < 3$ and R is a hydrocarbon radical of 1 to 20 carbon atoms), and (EA_2) inorganic chlorides consisting of the group of $SiCl_4$, $SnCl_2$, $SnCl_4$, $TiCl_4$, $ZrCl_4$, PCl_3, VCl_4, $SbCl_5$, SCl_2, $MnCl_2$, $FeCl_2$ and $NiCl_2$,

at a reaction temperature of 0° to 500° C.,

(ED) and (EA) being respectively reacted one to 10 times, $TiCl_4$ being employed as said electron acceptor at least once, and

(ED) and (EA) being respectively employed in an amount of 5 to 50 parts by weight each time, based on 100 parts by weight of said solid product (I),

to obtain a solid product (II);

combining with one part by weight of this solid product (II),

0.1 to 500 parts by weight of (OAl) an organoaluminum compound, and

0.05 to 20 parts by weight of (ED) an electron donor, and

at the time of this combination, reacting 0.05 to 300 parts by weight based on one part by weight of said solid product (II), of (α-O) an α-olefin, with a combination of said solid product (II) and said (OAl) or a combination of said solid product (II), said (OAl) and said (ED), at a temperature of 0° to 100° C. for a period of one minute to 20 hours,

to obtain a preactivated catalyst; and

polymerizing an α-olefin or α-olefins in the presence of this catalyst.

4,363,902

PROCESS AND HEAVY METAL CATALYST FOR THE POLYMERIZATION OF α-OLEFINS, PARTICULARLY POLYETHYLENE

Dieter Kurz, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,704
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010202; Jul. 8, 1980, 3025759
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—114 16 Claims

1. An improvement in the process for the polymerization of an at least one α-olefin comprising reacting said α-olefin under elevated temperatures and pressures in the presence of a solid polymerization catalyst consisting essentially of a solid compound containing (1) element(s) of the IV and/or V subgroup(s) of the Mendeleev Periodic Table, (2) magnesium, (3) halogen, (4) oxygen, and possibly (5) element(s) of the II and/or III main group(s) of the Mendeleev Periodic Table, which solid compound is activated with at least one organometallic compound where said metal is from the II and/or III main group(s) of the Mendeleev Periodic Table, and recovering a polymerizate, the improvement consisting of preparing said solid compound prior to activation, by reacting a primary solid containing magnesium and halogen prepared from at least one hydrocarbon-soluble magnesium compound and at least one halogen compound selected from the group consisting of a chlorohydrocarbon having from 1 to 6 carbon atoms of which at least one carbon atom has at least two directly bonded chlorine atoms, a carbon chloride compound having from 1 to 6 carbon atoms, and mixtures thereof, in two successive and separate reacting stages A and B, in either order, where a solid based on magnesium compound(s) is reacted in reaction stage A in suspension in at least one liquid hydrocarbon with

(i) at least one alkoxy compound of a metal selected from the group consisting of potassium, sodium, magnesium, calcium, zinc, boron, aluminum, silicon, tin, titanium, zirconium, phosphorus, vanadium and sulfur, said compound containing at least one alkoxy group having from 3 to 18 carbon atoms selected from the group consisting of secondary alkoxy and tertiary alkoxy, and

(ii) at least one halogen-containing titanium compound of the formula

$$X_aTi(OR^4)_{4-a}$$

wherein X represents halogen, R^4 is a substituent selected from the group consisting of alkyl having 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and a is 2, 3 or 4,

and, in reaction stage B, a solid based on magnesium compound(s) in suspension in at least one liquid hydrocarbon is reacted with

(i) at least one halogen-containing titanium compound of the formula

$$X'_bTi(OR^3)_{4-b}$$

wherein X' represents halogen, R^3 represents a substituent selected from the group consisting of alkyl having from 1 to 8 carbon atoms and hydrocarbon aryl having from 6 to 8 carbon atoms, and b is 2, 3 or 4, and

(ii) at least one organoaluminum compound, whereby a polymerizate is recovered having a broad molecular-weight distribution.

4,363,903

VINYL CHLORIDE COPOLYMER AND COMPOSITION CONTAINING THE SAME

Kazumasa Yamane, Kobe; Masahiro Kobayashi, Amagasaki, and Masahiko Takada, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

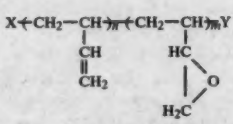
Filed Nov. 26, 1980, Ser. No. 210,858

Claims priority, application Japan, Nov. 30, 1979, 54-155874; Dec. 4, 1979, 54-157296

Int. Cl.³ C08F *24/00, 236/00*

U.S. Cl. 526—273 1 Claim

1. A copolymer prepared by polymerizing a reaction system comprising a mixture of monomeric components (a) vinyl chloride or a mixture of at least 50% by weight vinyl chloride and a monomer copolymerizable therewith and (b) 0.001 to 10 parts by weight per 100 parts by weight of the monomeric component (a) of a compound having the following general formula:



wherein X and Y are independently hydrogen, hydroxyl or carboxyl, n is an integer of 2 to 100 and m is 0 or an integer of 1 to 80, the polymerization being carried out employing a free-radical polymerization initiator.

4,363,904

HIGH TEAR STRENGTH POLYMERS

William A. Fraser, Princeton; Norma J. Maraschin, Somerset; Frederick J. Karol, Belle Mead, all of N.J., and Alexander J. Makai, Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 49,555, Jun. 18, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,913

Int. Cl.³ C08F *210/16*

U.S. Cl. 526—348.2 7 Claims

1. An ethylene based hydrocarbon polymer comprising ethylene, C_a monomer and C_b monomer,

wherein the C_a monomer is selected from propylene, butene-1 and mixtures thereof, and the C_b monomer is selected from one or more C_5 to C_8 alpha monoolefins which contain no branching closer than the fourth carbon atom

the molar ratio in the polymer of (C_a/C_2) is about 0.006 to 0.09 and the molar ratio of (C_b/C_2) is about 0.003 to 0.07, and the Branch Chain Factor is about 0.2 to 0.8, and said polymer being heterogeneous and having a density of about 0.91 to 0.94,

n-hexane extractables content at 50° C. of less than about 5.5 weight percent,

melt index of about 0.5 to 5.0,

M_w/M_n of about 2.7 to 4.3, and

melt flow ratio of about 22 to 36.

4,363,905

POLYCARBONATE TRANSESTERIFICATION FROM BIS(ORTHO-NITROARYL)CARBONATE

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

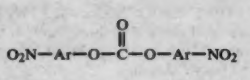
Filed Apr. 23, 1980, Ser. No. 143,805

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—196 12 Claims

1. A thermoplastic polycarbonate transesterification process comprising reacting (A) a bis(ortho-nitroaryl)carbonate of the formula,



wherein Ar is an aromatic ring; with (B) a dihydric phenol under basic reaction conditions including a phase transfer catalyst.

4,363,906

CONDENSATION PRODUCT PREPARED FROM N,N'-ETHYLENE-UREA AND FORMALDEHYDE

Osvaldo Cicchetti; Spartaco Fontani; Gianluigi Landoni, all of Milan; Renato Locatelli, Ferrara; Guido Bertelli, Ferrara, and Pierpaolo Roma, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

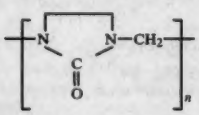
Filed Apr. 2, 1981, Ser. No. 250,102

Claims priority, application Italy, Apr. 3, 1980, 21165 A/80

Int. Cl.³ C08G *2/00, 12/34*

U.S. Cl. 528—248 4 Claims

1. A solid and water-insoluble condensation product of N,N'-ethyleneurea and formaldehyde, characterized by the structure



wherein n is an integer from 20 to 60 having a mean value of 41, and by an average number molecular weight M_n ranging from 2,000 to 6,000.

3. The process for producing the condensation product of claim 1, which comprises reacting in an aqueous medium, equimolecular amounts of N,N'-ethyleneurea and formaldehyde, at a pH of about 2 and at a temperature of from 0° C. to 40° C., the formaldehyde being added at any time provided the temperature is maintained constant.

4,363,907

COHALOGENATION PROCESS FOR POLYESTERS

Robert E. Hefner, Jr.; Hans R. Friedli, and Mark J. Hazelrigg, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 14, 1981, Ser. No. 283,315

Int. Cl.³ C08G *63/02, 63/68, 63/76, 79/02*

U.S. Cl. 528—287 17 Claims

1. A process for preparing halogenated compositions of (1) and α,β-unsaturated polyester containing pendant unsaturated groups, (2) a dicyclpentadienyl ester of an α,β-unsaturated carboxylic acid and (3) a reactive diluent, said process comprising the reaction of (a) a blend of (1) and (2) in proportions that the total unsaturation of pendant and dicyclopentadienyl unsaturation equals, when halogenated, the amount of halogen desired in said halogenated composition, with (b) about a stoichiometric amount, based on said total non α,β-unsaturation, of halogen, said reaction conducted at a temperature of less than about 25° C. until halogenation is substantially complete, after which a polymerization inhibitor-stabilizer is added, any solvent removed, followed by the addition of said reactive diluent.

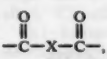
4,363,908

POLYESTER MODIFIED WITH ALKYL- OR ALKENYLSUCCINIC ANHYDRIDES

Frederick B. Joyner; Jimmy R. Trotter, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,816
Int. Cl.³ C08G 63/16
U.S. Cl. 528—302 5 Claims

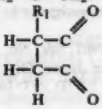
1. A composition comprising a copolyester having a melting point of about 90° C. to about 200° C. and an inherent viscosity of about 0.4 to about 1.2, said copolyester containing the following divalent radicals:



(A)

at least one of —O—Y—O— and (B)

—O—CH_2—CH_2—O—CH_2—CH_2—O—, and



(C)

wherein X is comprised of at least 65 mole % of the divalent 1,4-cyclohexylene radical with at least 85 mole % thereof giving the trans configuration and 0 and 35 mole % of at least one divalent radical selected from other divalent cycloaliphatic radicals or from divalent aromatic radicals containing 6 to 12 carbon atoms, and from primary aliphatic hydrocarbon radicals containing 2 to 34 carbon atoms, Y is a divalent aliphatic or cycloaliphatic radical containing 2 to 8 carbon atoms, R_1 is a radical containing at least 3 carbon atoms, and wherein said copolyester is further characterized in that radical (A) is present in the amount of about 98 to about 65 mole percent and radical (C) is present in the amount of about 2 to about 35 mole percent.

4,363,909

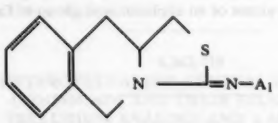
THIAZOLO[3,4-b]ISOQUINOLINES

Daniel Farge, Thiais; Alain Jossin, St-Cloud; Gerard Ponsinet, Sucy-en Brie, and Daniel Reisdorf, Thiais, all of France, assignors to Rhone Poulenc Industries, France

Filed Dec. 2, 1980, Ser. No. 212,253
Claims priority, application France, Dec. 4, 1979, 79 29751; Oct. 17, 1980, 80 22260
Int. Cl.³ C07D 513/04
U.S. Cl. 544—238 10 Claims

1. An isoquinoline derivative of the formula:

III



wherein the symbol A_1 represents an isoquinol-8-yl, 3-methylisoquinol-8-yl, 3-hydroxymethylisoquinol-5-yl, 3-carboxymethylisoquinol-5-yl, quinol-5-yl, thienopyrid-3-yl, benzimidazol-5(or -6)-yl, thien-2-yl or thiazol-2-yl radical, a 4-(or 5-) carboxyalkylthiazol-2-yl radical in which the alkyl moiety is linear or branched and contains 1 to 4 carbon atoms, or a 1,3,4-thiadiazol-2-yl, pyrazol-3-yl, imidazolyl, pyrimidin-2-yl, pyridazin-3-yl or pyrazin-2-yl radical, it being understood that a monocyclic heterocyclic ring within the definition of A_1 may be substituted by a linear or branched alkyl radical containing 1 to 4 carbon atoms, in the (S) or (R,S) form or a mixture thereof, or when A_1 is other than thien-2-yl, a non-toxic pharmaceutically acceptable acid addition salt thereof, or, when A_1 represents a 3-carboxymethylisoquinol-5-yl or 4-(or 5-)-carboxyalkylthiazol-2-yl radical, optionally substituted by an alkyl radical as hereinbefore defined, a non-toxic pharmaceutically acceptable metal salt thereof or a non-toxic pharmaceutically acceptable addition salt thereof with a nitrogen-containing base.

4,363,910

2,2-DIMETHYL-1,2-DIHYDROQUINOLINE DERIVATIVES USEFUL AS ANTIOXIDANTS

Dezsö Ambrus; Tamas Szabolcoi; Istran Hutas, all of Budapest, Hungary assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Feb. 15, 1980, Ser. No. 121,810
Claims priority, application Hungary, Feb. 21, 1979, CI 1916
Int. Cl.³ C07D 215/36
U.S. Cl. 546—172 3 Claims

1. (2,2-Dimethyl-1,2-dihydroquinoline-4-yl)-methylsulfonic acid or a salt thereof.

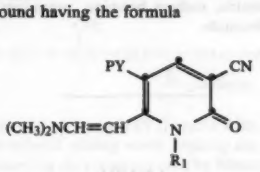
4,363,911

1,2-DIHYDRO-6-[2-(DIMETHYLAMINO)ETHENYL]-2-OXO-5-(PYRIDINYL) NICOTINONITRILES

George Y. Lesher, Schodack, and Ruth P. Brundage, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 3, 1981, Ser. No. 298,935
Int. Cl.³ C07D 401/04
U.S. Cl. 546—257 4 Claims

1. A compound having the formula



or acid-addition salt thereof, where R_1 is hydrogen or methyl, and PY is 4-pyridinyl or 3-pyridinyl, or 4-pyridinyl or 3-pyridinyl having one or two lower-alkyl substituents.

4,363,912

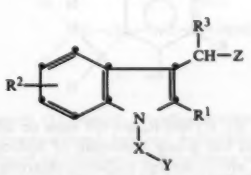
INDOLE THROMBOXANE SYNTHETASE INHIBITORS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 3, 1981, Ser. No. 326,800
Claims priority, application United Kingdom, Dec. 15, 1980, 8040081
Int. Cl.³ C07D 401/06
U.S. Cl. 546—273 7 Claims

1. Compounds of the formula:

(I)



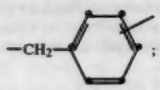
where

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_7 cycloalkyl or phenyl;

R^2 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, or halo;

R^3 is hydrogen or C_1–C_4 alkyl;

X is $—(CH_2)_n—$ where n is 1, 2 or 3, $—CH_2CH(CH_3)—$ or



Y is —COOH, —COO (C_1–C_4 alkyl), —$CONH_2$, —CN or 5-tetrazolyl;
and Z is 3- or 4-pyridyl;
and the pharmaceutically acceptable salts thereof.

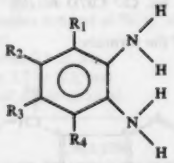
4,363,913
PREPARATION OF 2-AMINOBENZOTHIAZOLES
R. Donald Clark, and Herman S. Pridgen, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 23, 1981, Ser. No. 246,496
Int. Cl.³ C07D *277/82*
U.S. Cl. 548—164 5 Claims

1. In a process for the preparation of 2-aminobenzothiazoles by the oxidative ring closure of an arylthiourea, the improvement comprising the step of contacting the arylthiourea dissolved in sulfuric acid with a catalytic amount of bromine, hydrogen bromide, sodium bromide, potassium bromide or ammounium bromide.

4,363,914
PREPARATION OF BENZOTRIAZOLES
John W. Long, Cincinnati, and Lubomir Vacek, Toledo, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed Jan. 5, 1981, Ser. No. 222,445
Int. Cl.³ C07D *249/18, 249/20*
U.S. Cl. 548—257 18 Claims

1. A process for producing aqueous metal salts of benzotriazoles consisting essentially of mixing in the presence of water reactive amounts of:

(a) at least one aromatic orthodiamine having the structure:



wherein R_1, R_2, R_3 and R_4 are the same or different and selected from the group consisting of hydrogen, alkyl, alkoxy, aryl, aroxy, aralkyl, aralkoxy, alkaroxy, and halogen wherein aryl and "ar-" is defined as phenyl and wherein alkyl or "alk-" is defined as having 1–50 carbons; and

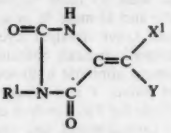
(b) at least one alkali metal nitrite; and heating the aqueous mixture at temperatures ranging from about 100° C. up to about 350° C. and at pressures sufficient to maintain liquid water in the reaction.

4,363,915
BENZYLSULFONYL DIETHYLCARBAMYL TRIAZOLE AND USE AS A SELECTIVE HERBICIDE
Natu R. Patel, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Division of Ser. No. 174,975, Aug. 4, 1980, Pat. No. 4,280,831.
This application Mar. 19, 1981, Ser. No. 245,310
Int. Cl.³ A01N *47/38*; C07D *249/12*
U.S. Cl. 548—265 1 Claim

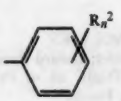
1. 3-Benzylsulfonyl-1-diethylcarbamoyl-1,2,4-triazole.

4,363,916
HYDANTOIN DERIVATIVES
Kiyoshi Fukui; Noboru Kakeya; Hiroshi Jibiki, and Junichiro Kita, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Ube, Japan
Filed Sep. 30, 1981, Ser. No. 306,964
Claims priority, application Japan, Oct. 9, 1980, 55/140406
Int. Cl.³ C07D *233/78*
U.S. Cl. 548—313 4 Claims

1. A hydantoin derivative represented by the formula



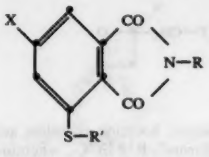
where, R^1 represents a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms, an allyl group, a cyclohexyl group, a benzyl group or a group



(where R^2 represents an alkyl group of from 1 to 4 carbon atoms, an alkoxy group of from 1 to 4 carbon atoms, a halogen atom or a nitro group, and n is 0, 1, 2 or 3), X^1 represents an alkoxycarbonyl group of from 2 to 5 carbon atoms, a benzoyl group, an aliphatic acyl group of from 2 to 5 carbon atoms or a cyano group, and Y represents an alkoxycarbonyl group of from 2 to 5 carbon atoms or an aliphatic acyl group of from 2 to 5 carbon atoms.

4,363,917
3,5-DISUBSTITUTED PHTHALIC ACID IMIDES, PHTHALIC ACIDS AND PHTHALIC ACID ANHYDRIDES
Walter Fischer; Vratislav Kvita, both of Reinach, and Hans Zweifel, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Apr. 28, 1981, Ser. No. 258,268
Claims priority, application Switzerland, May 6, 1980, 3518/80
Int. Cl.³ C07D *209/48*
U.S. Cl. 548—480 9 Claims

1. A compound of the formula I



(I)

in which R is hydrogen, C_{1-20}-alkyl, C_{2-5}-alkenyl, C_{3-5}-alkynyl, C_{5-12}-cycloalkyl, benzyl, phenyl or toluyl, X is $—NO_2$, —OR', —SR' or $—SO_2R'$ and the (R')s independently of one another are C_{1-20}-alkyl, C_{3-5}-alkenyl, C_{3-5}-alkynyl, C_{2-4}-monohydroxyalkyl, C_{1-12}-halogenoalkyl, benzyl, C_{5-12}-cycloalkyl, phenyl, carboxyphenyl, halogenophenyl, nitrophenyl, alkyl- or alkoxy-phenyl each having 1–4 C atoms in the alkyl or alkoxy moieties, or acetylaminophenyl.

4,363,918

METHOD OF PREPARING 1-ALKYL-3-CARBOXY-1H PYRROLE-2-ACETIC ACIDS

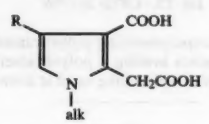
Rudolf Albert, Mechelen; Albert Willemsens, Beerse, and Guido van der Veken, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation of Ser. No. 74,447, Sep. 11, 1979, abandoned, which is a continuation of Ser. No. 918,855, Jun. 23, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,784

Int. Cl.³ C07D *207/34*

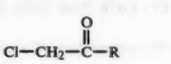
U.S. Cl. 548—531 **8 Claims**

1. A process of preparing 1-alkyl-3-carboxy-1H-pyrrole-2-acetic acids having the formula



(I)

wherein R is a member selected from the group consisting of hydrogen and lower alkyl and alk represents a lower alkyl radical, which process comprises a condensation reaction of 3-oxo-pentanedioic acid with a 1-chloro-2-alkanone of the formula



(II)

and a lower alkanamine.

4,363,919

HETEROFULVALENE GEMINAL DITHIOLATE COMPOUNDS AND THEIR SELENIUM AND TELLURIUM ANALOGS AND A METHOD OF FABRICATING THE SAME

Edward M. Engler, Wappingers Falls; Vishnubhai V. Patel, Yorktown Heights, both of N.Y., and Robert R. Schumaker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 38,050, May 10, 1979, Pat. No. 4,312,991. This application Aug. 17, 1981, Ser. No. 293,568

Int. Cl.³ C07D *409/04*

U.S. Cl. 549—32 **3 Claims**

1. A new composition of matter 2,3-dicyano-6,7-dihydrotetrathiafulvalene.

2. A new composition of matter 2,3-dicyano-6-ethoxy-6,7-dihydrotetrathiafulvalene.

3. A new composition of matter 2,3-dicyano-6,7-trimethylenetetrathiafulvalene.

4,363,920

PROCESS FOR THE PREPARATION OF N-[2-(-THENOYL)THIOPROPIONYL]-GLYCINE

Renzo Viscardi, Tribiano, Italy, assignor to B.T.B. Industria Chimica S.p.A., Tribiano, Italy

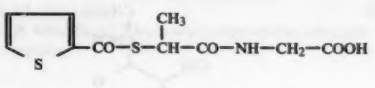
Filed May 26, 1981, Ser. No. 266,965

Claims priority, application Italy, Jun. 3, 1980, 22516 A/80

Int. Cl.³ C07D *333/24*

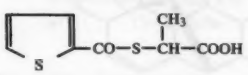
U.S. Cl. 549—72 **4 Claims**

1. Process for the preparation of N-glycine (I) of formula:



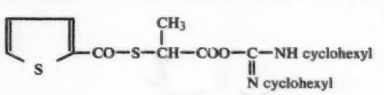
(I)

which consists of reacting glycine (III) with 2-(2-thenoyl)thiopropionic acid (II) of formula



(II)

in the presence of N,N'-dicyclohexyl-carbodiimide at a temperature of 15°–20° C. in an aprotic solvent whereby said compound of formula (II) is converted in situ into the compound of formula (VI)



(VI)

and the compound of formula (VI) reacts with glycine, then removing the solvent, adding water, making the reaction mixture basic, removing dicyclohexyl urea by filtration and isolating said product of formula (I) by acidification.

4,363,921

CYANOGUANIDINE DERIVATIVES

Satoru Tanaka, Higashi-Kurume; Katsutoshi Shimada, Tokyo; Kazunori Hashimoto, Matsudo; Kiichi Ema, and Koichiro Ueda, both of Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

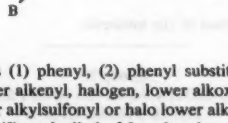
Division of Ser. No. 120,876, Feb. 12, 1980, Pat. No. 4,287,346. This application Apr. 13, 1981, Ser. No. 253,276

Claims priority, application Japan, Feb. 16, 1979, 54/15989; Feb. 16, 1979, 54/15990

Int. Cl.³ C07C *33/10*; C07D *307/52, 333/10*

U.S. Cl. 549—74 **1 Claim**

1. Cyanoguanidine compound of the formula:



wherein

A represents (1) phenyl, (2) phenyl substituted by lower alkyl, lower alkenyl, halogen, lower alkoxy, lower alkylthio, lower alkylsulfonyl or halo lower alkyl, (3) furyl, (4) thienyl or (5) cycloalkyl of 5 to 6 carbon atoms;

B represents phenyl;

R represents lower alkyl or lower alkenyl;

X represents lower alkylene or lower alkylene containing a divalent sulfur atom, and

p is 0 or 1, with the proviso that when A is unsubstituted phenyl and B is phenyl, p is 0,

or a pharmaceutically acceptable acid addition salt thereof.

4,363,922
ESTERS OF ANTIBIOTIC NODUSMICIN

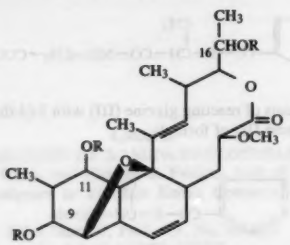
Barney J. Magerlein, and Howard A. Whaley, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 175,409, Aug. 6, 1980. This application Jun. 15, 1981, Ser. No. 273,605

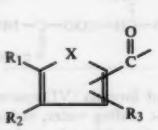
Int. Cl.³ C07D *313/00*

U.S. Cl. 549—266 **34 Claims**

1. A compound of the formula



wherein R is H in no more than two positions at the same time, a blocking group in at least one position, said blocking group selected from the group consisting of trisubstituted silyl ethers, substituted and unsubstituted tetrahydropyranyl ethers, β,β,β-trichloroethyl ether, and carbonate esters, or a radical of the formula



in no more than two positions at the same time, wherein X is selected from the group consisting of NH, S and O; R_1, R_2 and R_3 are the same or different and are selected from the group consisting of H, OH, halogen, NO_2, alkyl of 1 to 8 carbons, inclusive, NH_2, NR_4R_5, wherein R_4 and R_5 can be selected from the group consisting of H, OH, and alkyl and substituted alkyl, wherein the alkyl is from 1 to 8 carbon atoms, inclusive, and the substituent on substituted alkyl can be OH, halogen, and SH_2; O- and S-alkyl, wherein alkyl is from 1 to 8 carbon atoms, inclusive; O acyl, and N acyl, wherein the acyl radical is a hydrocarbon carboxylic acid acyl of from 2 to 18 carbon atoms, inclusive; or a halo-, nitro-, hydroxy-, amino-, cyano-, thiocyano-, or loweralkoxy-substituted hydrocarbon acyl radical of from 2 to 18 carbon atoms, inclusive, excluding wherein X is N, $R_1=R_2=R_3$ and H, and

is on the 2 position of the molecule.

4,363,923
4-HALGENO-OXETAN-2-ONES AND PROCESS FOR THEIR PRODUCTION

John G. Dingwall, Sale, and Brian Tuck, Stockport, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

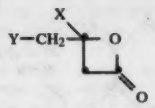
Filed Mar. 27, 1981, Ser. No. 248,373

Claims priority, application United Kingdom, Mar. 27, 1980, 8010384

Int. Cl.³ C07D *305/12*; B01J *19/12*

U.S. Cl. 549—329 **9 Claims**

1. A compound having the formula I



(I)

wherein X is a chlorine, bromine or iodine atom and Y is a residue having the formula $R^1R^2R^3C$-, wherein R^1 and R^2 are the same or different and each is a fluorine, chlorine or bromine atom and R^3 is a hydrogen, fluorine, chlorine or bromine atom, a group $-CR^4R^5R^6$, a cyano group, a group $-COR^7$ or $-PO(R^8)_2$ wherein R^4, R^5, R^6, independently, are F, Cl or Br, R^7 and R^8 are the same or different and each is a chlorine atom or a group $-OR^9$ wherein R^9 is a C_1–C_4 straight chain or branched alkyl group with the proviso that when X is a chlorine atom, none of R^1, R^2, R^3, R^4, R^5 and R^6 can be a bromine atom.

5. A process of producing a compound of formula I as claimed in claim 1, comprising reacting diketene with a compound XY wherein X and Y are as defined in claim 1, in the presence of an agent capable of forming free radicals.

4,363,924
DEPOLYMERIZATION OF POLYTETRAMETHYLENE GLYCOL ETHERS

Herbert Mueller, Frankenthal, and Otto H. Huchler, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,657

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042960

Int. Cl.³ C07D *307/08*

U.S. Cl. 549—509 **6 Claims**

1. A process for depolymerizing polytetramethylene glycol ethers which comprises heating a polytetramethylene glycol ether in the presence of a bleaching earth at from 90° to 180° C.

4,363,925
PREPARATION OF AROMATIC SILANES

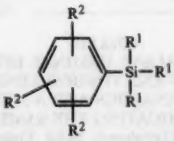
Rolf-Dieter Acker, Leimen; Gerhard Hamprecht, Weinheim, and Franz-Josef Mueller, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,503

Int. Cl.³ C07F *7/08*, *7/10*, *7/18*

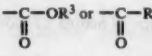
U.S. Cl. 556—415 **9 Claims**

1. A process for the preparation of aromatic silanes of the formula:

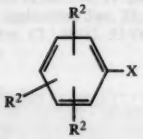


I

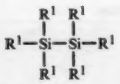
where the individual radicals R^1 and R^2 can be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, and each radical R^2 can also be hydrogen, halogen, nitro, cyano, —O—R^3,



where R^3 is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, wherein an aromatic halogen compound of the formula:



where R^2 has the above meaning and X is halogen, is reacted with a disilane of the formula:



III

where R^1 has the above meaning, in the presence of a palladium complex with a ketone and/or an anhydride, and in the presence of a phosphine or phosphite which is trisubstituted by aliphatic or aromatic radicals.

4,363,926

PREPARATION OF NOVEL 1-HYDROXYCYCLOPROPANECARBOXYLIC ACID INTERMEDIATES

II Hans-Georg Heine, Krefeld; Hans-Joachim Knops, Wuppertal, and Uwe Priesnitz, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

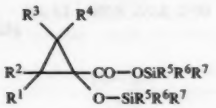
Filed Sep. 18, 1981, Ser. No. 303,668

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037302

Int. Cl.³ C07F 7/18

U.S. Cl. 556—442 9 Claims

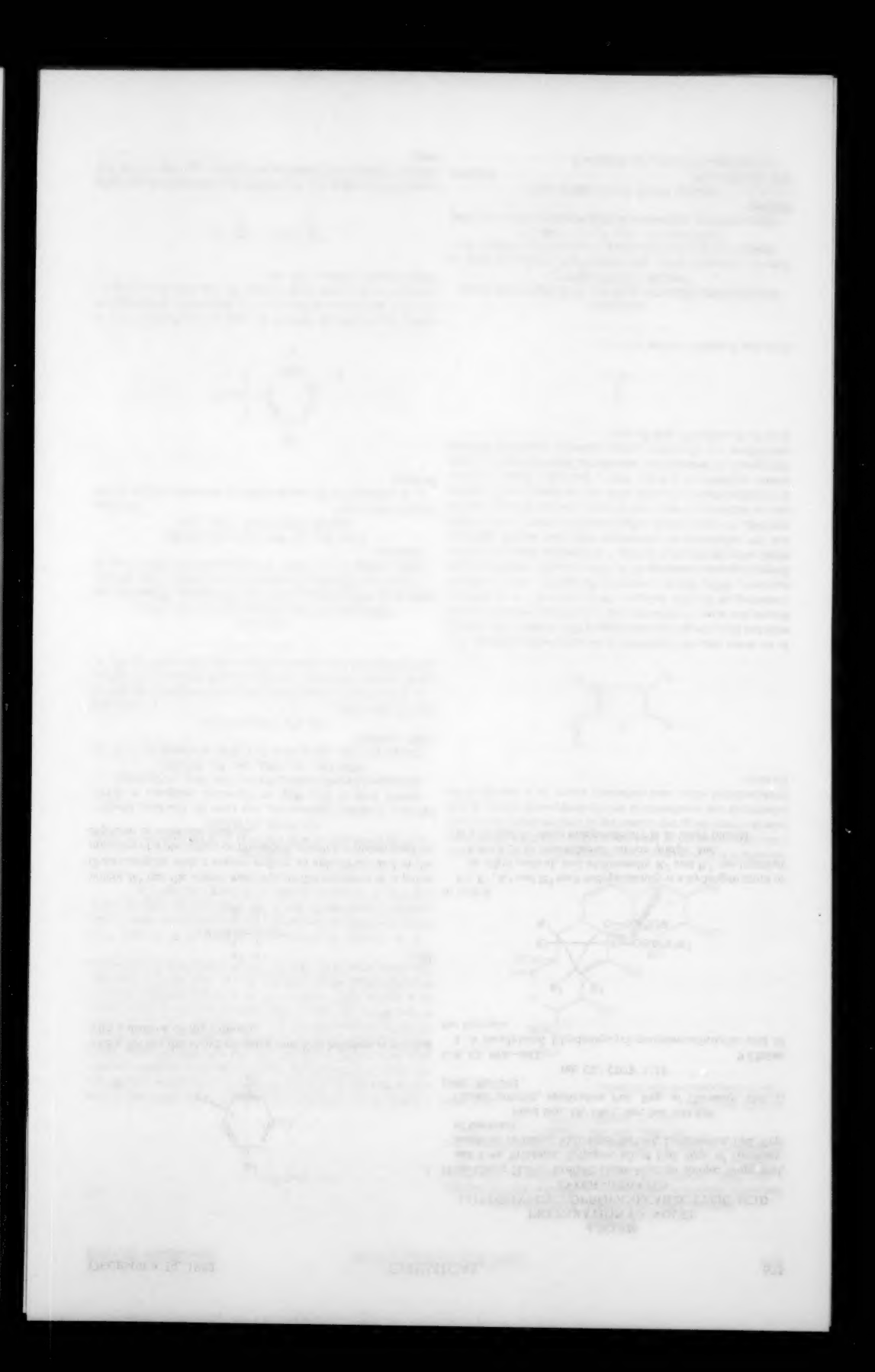
1. A bissilylated 1-hydroxycyclopropanecarboxylic acid of the formula



in which

R^1, R^2, R^3 and R^4 each independently is a hydrogen atom or an alkyl radical, and additionally R^2 and R^3 can together form a 3- to 5-membered carbon bridge, and

R^5, R^6 and R^7 each independently is an alkyl radical.



4,363,927

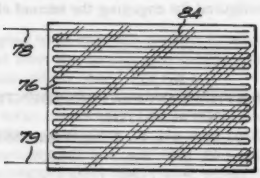
THERMOELECTRIC GENERATOR PANEL AND HEATER DEVICE THEREFOR

Kenneth T. Wilson, P.O. Box 267, Ocala, Fla. 32670

Continuation-in-part of Ser. No. 117,342, Feb. 15, 1980, Pat. No. 4,276,441. This application Jun. 22, 1981, Ser. No. 275,753

Int. Cl.³ H01L *35/00, 35/28*

U.S. Cl. 136—206 6 Claims



1. A thermoelectric generator device comprising a panel composed of first and second pluralities of thermocouples, defined in respective series on alternating pluralities of substrate strips, said strips being disposed in a face-to-back relationship and including a parallel electrical connection means between said first and second pluralities; said panel including a first relatively hot side and a second relatively cool side as defined by the normal function of said thermocouples, and electric heater means fixed relative to said cool side with control means connected between said electrical connection and heater means to maintain a substantially constant voltage output, 12 volts for example, from said panel.

4,363,928

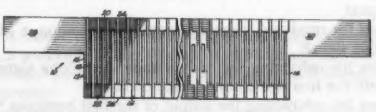
THERMOELECTRIC GENERATOR PANEL AND COOLING DEVICE THEREFOR

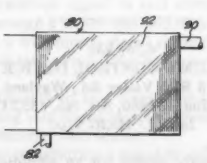
Kenneth T. Wilson, P.O. Box 267, Ocala, Fla. 32670

Continuation-in-part of Ser. No. 117,342, Feb. 15, 1980, Pat. No. 4,276,441. This application Jun. 22, 1981, Ser. No. 275,754

Int. Cl.³ H01L *35/00, 35/28*

U.S. Cl. 136—206 8 Claims





1. A thermoelectric generator device comprising a panel composed of first and second pluralities of thermocouples, defined in respective series on face sides of alternating pluralities of substrate strips, said strips being disposed in a face-to-back relationship and including a parallel electrical connection means between said first and second pluralities; said panel including a first, hot side, and a second, cool side, as defined by the normal function of said thermocouples, and a heat exchanger means, fixed in a generally covering relation to said cool side.

4,363,929

PAPER THERMOCOUPLE BODY

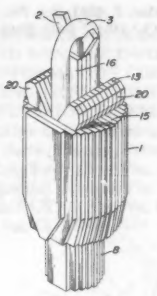
Theo P. C. Bollen, Genk, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed Dec. 23, 1980, Ser. No. 219,471

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000174

Int. Cl.³ G01K *1/12, 7/00*

U.S. Cl. 136—234 11 Claims



1. A disposable measuring head for sensing the temperature of a molten metal bath comprising a U-shaped thermocouple shield, a thermocouple supported within said shield, an insulating body supporting said shield, the body being characterized by a plurality of discrete flat plates having major faces laminated together, a plurality of the centrally disposed plates being longer than other plates, at least one of the centrally disposed plates having means supporting said shield at one end of the body an electrical contact means partially exposed on at least two of said plates, said contact means being electrically coupled to said thermocouple.

4,363,930

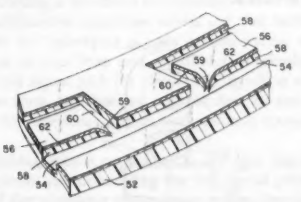
CIRCUIT PATH CONDUCTORS IN PLURAL PLANES

Norman E. Hoffman, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 4, 1980, Ser. No. 118,129

Int. Cl.³ H05K *3/04*

U.S. Cl. 174—68.5 3 Claims



1. A circuit board made by the process of laminating a layer of metal against a dielectric substrate, selected from a material which has an elongation in tensile to yield characteristic which prevents crack propagation in response to indentation, and

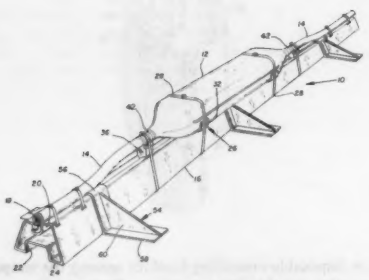
dividing said layer of metal into formerly contiguous, recessed and nonrecessed conductor path portions, with each said recessed path portion being recessed into a stable, indented portion of said substrate and having its periphery separated and electrically isolated from the periphery of an adjacent nonrecessed path portion along shear lines extending into the thickness of said substrate, each indented portion having a periphery indented by yield elongation coinciding with said lines of shear, and a transition metal portion connected between and contiguous with at least one said metal recessed portion and at least one said metal unrecessed portion, said transition metal portion is defined between two converging but unjoined peripheral edges of said at least one said metal unrecessed portion and slopes toward said at least one said metal recessed portion.

4,363,931

SPLICE STABILIZER

Bill R. Simons, Pittsburg, Kans., assignor to Max K. Evans, Garland, Tex.

Filed Mar. 2, 1981, Ser. No. 239,192
Int. Cl.³ H02G *9/00*; F16L *3/00*
U.S. Cl. 174—135 **16 Claims**



1. A device for stabilizing, with reference to the surrounding terrain, a cable splice enclosure having a cable splice therein, comprising:

a stabilizer rail adaptable to be positionable in a supporting position adjacent a splice enclosure,

a spacer base member slidably positionable longitudinally on the stabilizer rail and adaptable to support a cable component of a cable splice enclosure, and

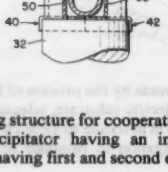
strap means adaptable to hold a cable splice enclosure in position against the stabilizer rail.

4,363,932

ELECTROSTATIC PRECIPITATOR INSULATOR CONSTRUCTION

Edward R. Peace, 1052 Galatea, Azusa, Calif. 91702

Filed Jun. 22, 1981, Ser. No. 275,936
Int. Cl.³ H01B *17/00*
U.S. Cl. 174—138 R **7 Claims**



1. An insulating structure for cooperation with an associated electrostatic precipitator having an inverted generally U-shaped member having first and second elongated leg portions which support a depending weight, said insulating structure comprising:

a first member which includes a section of a generally planar, generally circular first body having a depending peripherally disposed flange extending about at least a part thereof;

a slot defined in said first member in said section of a generally planar, generally circular first body, said slot being dimensioned and configured for engaging the first elongated leg portion;

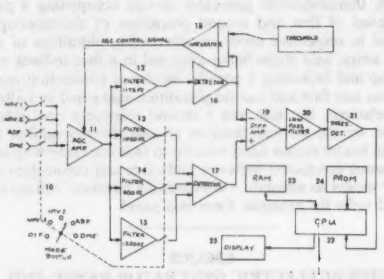
a cylindrical section generally aligned with the periphery of said slot in said first member, said cylindrical section having the inner surface thereof dimensioned and configured for engaging the first elongated leg portion and a second member which includes a section of a generally planar, generally circular second body having a depending peripherally disposed flange extending about at least a part thereof, said second member having a slot dimensioned and configured for engaging the second elongated leg portion.

4,363,933

AUTOMATIC NAVIGATION STATION IDENTIFIER AND MONITOR

John E. Mercer, 23401 94th Ave. S., Kent, Wash. 98031

Filed Nov. 10, 1980, Ser. No. 206,059
Int. Cl.³ H04N *5/44*; H04B *1/00, 17/00*
U.S. Cl. 178—118 **16 Claims**



11. Apparatus for electronically detecting a Morse code signal which is transmitted by a radio station, comprising:

a first bandpass filter which corresponds to the tone frequency of the Morse code signal;

a second bandpass filter which has a center frequency which is different from the tone frequency of the Morse code signal;

means for receiving, from a selected radio station, a Morse code signal;

means for delivering the Morse code identifying signal to both the first and second bandpass filters;

means for subtracting the output of the first bandpass filter from the output of the second bandpass filter to produce an identifier signal; and

station identifying means operable in response to an identifier signal to identify the station transmitting the Morse code signal.

4,363,934

VOLUME CONTROL DEVICE

Donald T. Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Filed Jun. 2, 1980, Ser. No. 155,517
Int. Cl.³ H03G *9/00*
U.S. Cl. 179—1 VL **15 Claims**

1. A volume control device for an amplifier and speaker system adapted for controlling the volume output level from the speaker while maintaining the input impedance of the device, with the speaker coupled therewith, within a constant

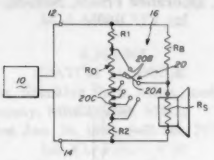
impedance range near the actual speaker impedance or a predetermined impedance, said device comprising:

input terminal means for receiving an output signal from the amplifier,

first impedance means,

means coupling the first impedance means in series with the speaker impedance across the input terminal means,

second impedance including variable impedance means



adapted to be manually settable to control volume output level from the speaker and having a variable impedance means output node,

means coupling the second impedance means in parallel with the series connection of the first impedance means and the speaker impedance,

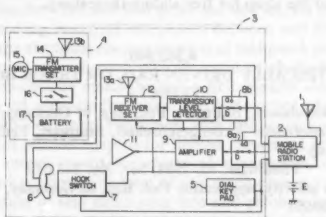
and means coupling the variable impedance output node to a junction point between the series connection of the first impedance means and the speaker impedance.

4,363,935

MOBILE RADIO TELEPHONE SYSTEM

Mitsuo Toya, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,369
Claims priority, application Japan, Jun. 8, 1979, 54-71137
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 EA **5 Claims**



1. A mobile radio telephone system including a telephone set which is capable of communicating with an external telephone subscriber through a mobile radio station, said telephone set comprising:

a wireless telephone transmitter energized and enabled to transmit a signal when said wireless telephone transmitter is detached from said telephone set;

a transmitter/receiver circuit for receiving a transmitted signal from said wireless telephone transmitter, transmitting the received signal to said external telephone subscriber through a switch and said mobile radio station and receiving a transmitted signal through said mobile radio station and said switch from said external telephone subscriber;

a speaker coupled to said transmitter/receiver circuit for reproducing said signal received from said external telephone subscriber into sound;

a handset for transmitting a signal to said external telephone subscriber through said switch and said mobile radio station and receiving a transmitted signal through said mobile radio station and said switch from said external telephone subscriber thereby reproducing the received signal into sound; and

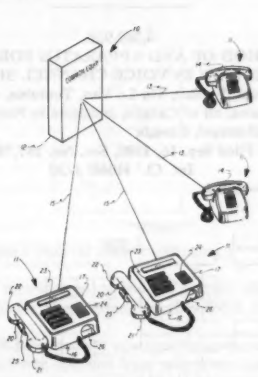
said switch being controlled by a hook switch of said telephone set in response to said handset being on or off-hook for connecting said mobile radion station to said handset when said handset is off-hook and to said transmitter/-receiver circuit when said handset is on-hook, whereby a driver of a vehicle can communicate with said external telephone subscriber while driving the vehicle either with said handset being on or off-hook.

4,363,936

TELEPHONE NETWORK INCLUDING COMMON EQUIPMENT WITH MESSAGE INFORMATION AND CONTROL INFORMATION CIRCUITS FOR CONNECTING TO STATIONS HAVING MULTIFUNCTION TELEPHONES

Ronald W. Christain; Uwe A. Pommerening; Stanley L. Russell, all of Longwood; Barry Slingsby, Altomante Springs, and Julian W. West, Longwood, all of Fla., assignors to Stromberg-Carlson Corporation, Orlando, Fla.

Filed Feb. 11, 1980, Ser. No. 120,786
Int. Cl.³ H04Q *5/18*
U.S. Cl. 179—18 E **13 Claims**



7. Common equipment for use in a telephone network that includes at least one multifunction telephone means and telephone transmission means for independently connecting telephones including a telephone transmission means that connects to the multifunction telephone means and that includes a first signal path for conveying signals corresponding to acoustic information to and from said multifunction telephone means and a second signal path for conveying signals in a frequency modulated form representing control data to and from said multifunction telephone means, said common equipment comprising:

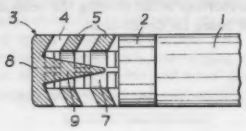
A. switching means connected to the first signal path for selectively interconnecting the first signal path with others of the telephone transmission means thereby to transfer acoustic information between telephones, and

B. control means connected to said switching means and to the second signal paths including means for transmitting and receiving frequency modulated signals representing control data to and from each of the second signal paths.

4,363,937
SOUND INLET FOR MICROPHONES

Bernhard Bruna, Vienna, Austria, assignor to AKG Akustische u.Kino-Geräte Gesellschaft m.b.H., Austria

Filed Nov. 19, 1980, Ser. No. 208,317
Claims priority, application Austria, Nov. 29, 1979, 7574/79
Int. Cl.³ H04R *1/08*
U.S. Cl. 179—121 R **8 Claims**

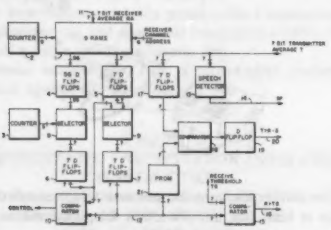


1. An improved sound inlet for a microphone having an elongated housing with a central longitudinal axis extending therethrough, and an electroacoustic transducer mounted within the housing with a diaphragm disposed perpendicular to the longitudinal axis of the housing, the improved sound inlet comprising a longitudinally extending wall portion attached to the housing to define and surround a cavity in front of the diaphragm, said wall portion having a plurality of channels extending at an oblique angle relative to the longitudinal axis through the wall portion from its outer side to its inner side adjacent the cavity, each of said channels having a first end opening on the inner side and a second end opening on the outer side, the second end opening being disposed closer to the diaphragm than the first end opening, and said wall portion including means for closing that end of the longitudinally extending wall portion remote from the housing.

4,363,938
METHOD OF AND APPARATUS FOR ECHO DETECTION IN VOICE CHANNEL SIGNALS

Fouad Daaboul, Verdun; Tiu Le Van, Touraine, and Kit-Chung Fung, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 16, 1980, Ser. No. 187,785
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **7 Claims**



1. An echo detector for detecting the presence on a first path of echoes of a sampled voice channel signal on a second path, comprising:

means responsive to speech signals for producing a first signal when speech signals are present on the first path;

means responsive to speech signals for producing a second signal when speech signals are present on the second path;

means for storing the n most recent signals which have occurred on the second path, where n is a plural integer equal to the number of signals which occur on the second path during a first predetermined period;

means for determining the greatest magnitude of the stored signals;

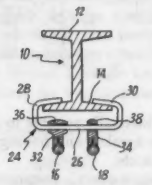
means for producing a third signal in dependence upon the magnitude of the signal on the first path relative to the determined greatest magnitude; and

means responsive to the first, second, and third signals for producing an echo decision for the signal on the first path.

4,363,939
ELECTRICAL SUPPLY LINE FOR THE SUPPLY OR CURRENT TO RAILWAY VEHICLES

Rene Oger, Ville d'Avray, France, assignor to C. Delachaux, Gennevilliers, France

Filed Nov. 10, 1980, Ser. No. 205,662
Claims priority, application France, Nov. 23, 1979, 79 28957
Int. Cl.³ B60M *1/24*
U.S. Cl. 191—43 **3 Claims**

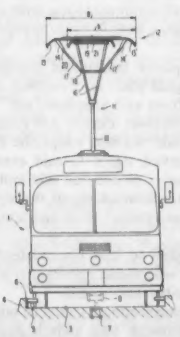


1. An electricity supply line for the supply of current to railway vehicles comprising two parallel wire connectors forming a current supply line for a current pick-up device, a rigid body supporting the wires, which body is provided with an electrically insulating covering and constituted by rails disposed end to end, and attachment members, freely mounted on the rails and able to move vertically and slide longitudinally on the rails, attaching the wires to the rails at spaced locations along the wires length, by which the wire conductors are supported alternatively such that any one attachment member supports only one of the wire conductors, each attachment member comprising a strap, a portion of said strap located transversely and beneath the rail, and a clip mounted on said portion of the strap for free sliding therealong.

4,363,940
ELECTRICALLY DRIVEN RAIL OR TRACK BOUND VEHICLE

Helmü Bertelsbeck, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,619
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009653
Int. Cl.³ B60L *5/06*
U.S. Cl. 191—59.1 **5 Claims**



1. An electrically driven track bound vehicle comprising at

least one bow trolley means cooperable with an overhead wire for supplying electrical energy to the vehicle, and height adjustable current collector means for carrying the at least one bow trolley means, characterized in that means are provided on the bow trolley means for automatically varying a width of the bow trolley means in response to a height adjustment of the current collector means in such a manner that the bow trolley means has a narrow width with the current collector means in a low position and a wide width with the current collector means at a high position.

4,363,941

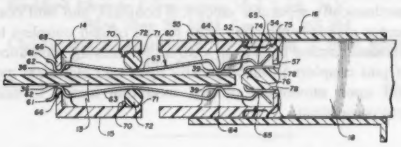
PATCH MODULE

Calvin G. Nelson, Brooklyn Park, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Jun. 26, 1981, Ser. No. 277,677

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—1 R **16 Claims**



1. A patch module usable with an insertable patch plug having at least one electrical contact element, said patch module comprising:

a circuit board;

a first electrical circuit electrically connected with a first point on said circuit board;

a second electrical circuit electrically connected with a second point on said circuit board, said first and second points being electrically insulated from each other; and

switch-contact means for selectively making electrical connection between said first point and said second point and for making electrical connection between said first point and the electrical contact element of said patch plug upon insertion of said patch plug into said patch module, said switch-contact means having a first portion electrically engaged with said first point, a second portion adapted for selective electrical engagment with said second point and a third portion adapted for limited movement relative to said circuit board for electrical engagement with the electrical contact element of said patch plug as a result of insertion of said patch plug into said patch module, said first, second and third portions of said switch-contact means being electrically connected with each other.

4,363,942

ASSEMBLY FOR THE KEYBOARDS OF ELECTRIC TYPEWRITERS OR SIMILAR MACHINES

Reinhard Deeg, Keltern, and Oswald Hack, Pforzheim, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,315

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007239

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—5 A **8 Claims**

1. A key assembly in a keyboard for electric typewriters or similar machines comprising a plurality of vertically guided keyboard elements each consisting of a key head and a key plunger, when actuated each keyboard element acting via its plunger upon a contact arranged between the plunger and a printed circuit board wherein the improvement comprises:

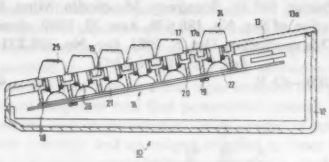
a baseplate;

said keyboard elements being inserted and removably mounted in said baseplate from above;

detent means releasably retaining said keyboard elements in said baseplate;

said baseplate having formed on its bottom side with a plurality of elongated supports;

said printed circuit board being firmly connected to the bottoms of said supports; and



spring means arranged between said key head and said printed circuit board to bias said key head away from said baseplate and wherein the force of said spring means is less than the retaining force of said detent means.

4,363,943

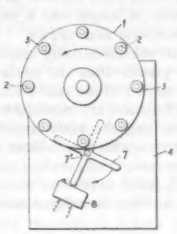
INTERVAL TIMER

Egon Sorensen, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Continuation of Ser. No. 127,694, Mar. 6, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,272

Int. Cl.³ H01H *43/10*

U.S. Cl. 200—38 R **3 Claims**



1. A momentary interval timer comprising

a base plate;

drive means mounted on one side of the said plate and having a rotatable shaft extending therefrom through said plate;

a device to be momentarily operated being mounted on said plate on the side opposite from said drive means;

a disc disposed on the side of said plate opposite from said drive means and connected to said shaft for rotation of said disc by said drive means;

said disc having a plurality of holes therethrough disposed in an equally spaced series adjacent the outer periphery of said disc;

cam means rotatably mounted between said disc and said device on the side of said plate opposite from said drive means;

said cam means having a hub adjacent the periphery on said disc and an equally spaced series of opposed elongated arms radiating from said hub.

said arms moving between said disc and said plate as said cam means is rotated and the free ends of said arms momentarily actuating said device as they rapidly pass thereby; and

a plurality of pins selectively positioned in said holes and extending through said disc toward said plate;

said pins being moved relatively slowly along a circular path by said rotating disc each engaging adjacent said hub the arm of said cam extending between said disc and said plate thereby rotating said cam and causing the tip of said arm

opposite from said engaged arm to move relatively rapidly by and momentarily actuate said device.

4,363,944

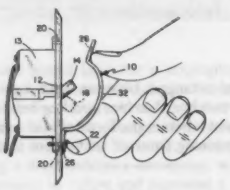
METHOD OF PREVENTING UNINTENTIONAL ACTUATION OF A LIGHT SWITCH

Earl J. Poirier, 149 W. Broadway, Monticello, Minn. 55362

Continuation of Ser. No. 180,670, Aug. 25, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,831

Int. Cl.³ H01N *27/00*

U.S. Cl. 200—42 R 4 Claims



1. A method of preventing unintentional actuation of a wall switch of the type having an actuating lever protruding through an aperture in a switch plate, said switch plate being attached to the wall switch on opposite sides of the actuating lever by a pair of screws spaced apart a predetermined distance, the method comprising:

providing a thin flexible body member having a flat configuration throughout its length and a pair of spaced apart apertures for receiving said screws,

said spaced apart apertures being spaced apart a distance substantially greater than the predetermined distance between the screws of the wall switch such that when the threaded fasteners are received by the spaced apart apertures attaching the body member to the switch plate, the body member flexes from said flat configuration into an arcuate configuration covering the actuating lever sufficiently to prevent accidental actuation of the lever but to allow intentional actuation of the lever, and

removing said screws from the wall switch, placing said flat body portion over the switch plate with one of the apertures through the body member aligned with one of the screws through the wall plate, inserting one of the screws through the aligned opening in the body member and the wall plate and tightening said screw,

flexing the central portion of the body member outwardly from said flat configuration into such an arcuate configuration and positioning said body member such that the other aperture of the body member is aligned with the other screw opening through the wall plate, and inserting the other screw through the other aligned opening and tightening said other screw to maintain the body member and the switch plate in position.

4,363,945

CABLE DERAILMENT RESPONSIVE APPARATUS

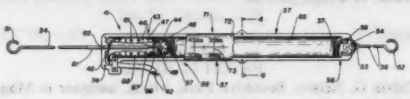
Jan K. Kunczynski, 2400 Arrowhead Dr., Carson City, Nev. 89701

Filed Nov. 17, 1980, Ser. No. 207,259

Int. Cl.³ H01H *35/00*

U.S. Cl. 200—61.18 10 Claims

1. A cable derailment responsive apparatus for use in terminating the operation of cable drive means for a moving cable supported upon a pulley assembly upon derailment of the cable from the pulley assembly, said pulley assembly including mounting means movably mounted to support means and carrying pulley means thereon; and said derailment responsive apparatus including spring biasing means coupled to said mounting means to bias said mounting means to a moved position upon derailment of said cable from said pulley assembly, and deactivation means connected to said mounting means and formed to terminate operation of said cable drive means upon movement of said mounting means to said moved position, said deactivation means including an electrical circuit having a circuit interrupting portion, and connector means coupled to said circuit interrupting portion and connected to transmit motion from said mounting means to said circuit



interrupting portion, wherein the improvement in said cable derailment responsive apparatus is comprised of:

said circuit interrupting portion being provided by a pair of mechanically separable electrical couplers, and said connector means being connected to one of said couplers to transmit motion thereto in a direction causing separation of said couplers to mechanically open said electrical circuit upon movement of said mounting means to said moved position.

4,363,946

INDUCTOR FOR INDUCTIVELY HEATING RACEWAYS OF ANTIFRICTION BEARING RINGS

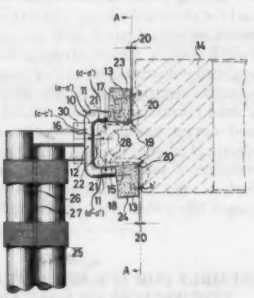
Eduard Busemann, Lippstadt, Fed. Rep. of Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Continuation of Ser. No. 928,561, Jul. 27, 1978, abandoned. This application May 29, 1980, Ser. No. 154,277

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734916

Int. Cl.³ H05B *6/14, 6/40*

U.S. Cl. 219—10.59 2 Claims



1. Inductive heating apparatus in combination with a bearing ring, the inductive apparatus being specifically for heating inductively low friction planar bearing surfaces and transition areas adjacent to the bearing surfaces on the bearing ring in order to harden the bearing surfaces without distortion, wherein the bearing surfaces are on a substantially rectangular projection on the inner surface of the bearing ring and include an axial bearing surface and parallel radial bearing surfaces, the transitional areas being areas on the inner surface of the bearing ring adjacent to the projection, the combination comprising:

a toroidal inductor formed of two opposed and parallel U-shaped sections joined by U-shaped bights wherein each U-shaped section includes a straight bight and a pair of legs depending therefrom which legs converge toward

one another before termination in the U-shaped bights which join the legs of the U-shaped sections, and

localized flux concentrators mounted on the U-shaped bights to increase the intensity of the field adjacent to the bights;

wherein,

the straight bights are juxtaposed with the axial bearing surface of the projection, the legs are juxtaposed with the parallel radial bearing surfaces of the projection and the U-shaped bights extend adjacent to the transitional areas on the inner surface of the ring, whereby hardening due to induction heating occurs simultaneously to all bearing surfaces and to the transitional area thus avoiding stress distortion between the projection and transitional area due to localized heating thereof.

4,363,947

ELECTRICAL HEATING ELEMENT

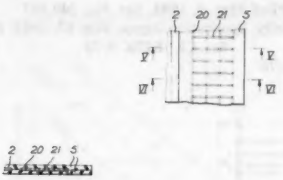
Hans A. Bergersen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,294

Claims priority, application Norway, Jul. 3, 1980, 802003

Int. Cl.³ H05B *3/34*

U.S. Cl. 219—528 **2 Claims**



1. Electrical resistance strip heating element comprising

an electrical resistance strip,

two insulation sheets between which the electrical strip is laminated, the insulation sheets having an outer periphery extending beyond the strip, and

reinforcing material laminated between the insulation sheets at the outer periphery for mounting the heating element, the reinforcing material being of a slightly stretchable, open mask material through which the insulation sheets come into contact, the reinforcing material having a thickness greater than the electrical resistance strip.

4,363,948

METHOD OF ELECTRICALLY CUTTING MATERIALS WITH A WIRE-SHAPED ELECTRODE AND APPARATUS FOR PRACTICING THE SAME

Teturoh Itoh, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

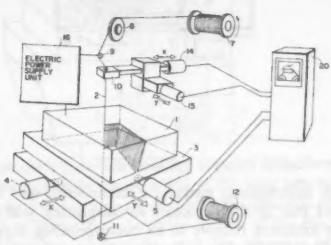
Filed Oct. 17, 1979, Ser. No. 85,828

Claims priority, application Japan, Mar. 13, 1979, 54-29168

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 W **3 Claims**

1. An apparatus for electrically cutting a work piece with a wire-shaped electrode in which electric current is applied to said wire-shaped electrode and said work piece through a working liquid applied to the working gap formed between said wire-shaped electrode and said work piece to electrically cut said work piece, and in correspondence to said cutting operation, said wire-shaped electrode and said work piece are relatively moved in a predetermined manner to cut said work piece into a desired configuration, in which the improvement comprises a power supply unit for applying said electric current to said wire-shaped electrode and said work piece, said power supply unit comprising: digital setting means for setting digital values corresponding to a pulse width, pulse interval and peak current, respectively, of said electric current applied to said wire-shaped electrode and said work piece; a first presettable counter receiving on preset inputs thereof said digital value representing said pulse width; a second presettable counter receiving on preset inputs thereof said digital value representing said pulse interval; a toggle-type flip-flop; an oscillator for producing clock pulses; a first AND gate having a first input coupled to receive said clock pulses, a second input coupled to a Q output of said flip-flop and an output coupled to a clock input of said first presettable counter; a second AND gate having a first input coupled to receive said clock pulses, a second input coupled to a Q output of said flip-flop, and an output coupled to a clock input of said second presettable counter; an OR gate having a first input coupled to a predetermined count output of said first presettable counter, a second input coupled to a predetermined count output of said second presettable counter, and an output coupled to reset inputs of said first and second presettable counters and a clock input of said flip-flop; a plurality of third AND gates, each of said third AND gates having a first input coupled to said Q output of said flip-flop and said third AND gates having second inputs coupled to receive said value representing said peak current; a plurality of current limiting resistors, one of said current limiting resistors being provided for each of said third AND gates; a plurality of switching means, one of said switching means being provided for each of said third AND gates, each of said switching means having a control input coupled to an output of a corresponding one of said third AND gates and a first current-carrying terminal coupled through a corresponding one of said current limiting resistors to a first of said wire-shaped electrode and said work piece; and a DC power source having a first terminal coupled to a second of said wire-shaped electrode and said work piece and a second terminal coupled to a second current-carrying terminal of each of said switching means.



4,363,949

TRAVELLING WIRE EDM APPARATUS

Jean Pfau, Collonge-Bellerive, and Benno I. Bonga, Crans, both of Switzerland, assignors to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Nov. 21, 1980, Ser. No. 208,934

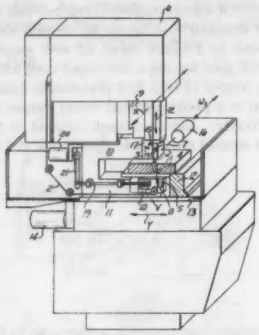
Claims priority, application Switzerland, Dec. 21, 1979, 11390/79

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **3 Claims**

1. In an apparatus for cutting by electrical discharges an electrode workpiece by means of a travelling electrode wire, said electrical discharges occurring in a machining zone between said electrode wire and said workpiece, said apparatus comprising a pair of electrode wire guide members mounted one on the end of a support arm and the other on the end of another support arm, said support arms being disposed parallel to each other on each side of the machining zone in the workpiece, and a pair of servo motors for displacing both said support arms in unison and said workpiece relative to each other along respective X- and Y-axes according to a predetermined path program, the improvement comprising a second pair of servo motors arranged one to displace one of said guide

members in a first direction along the axis of its corresponding support arm and the other along a second direction perpendicular to the axis of its corresponding support arm such as to guide said wire with a predetermined inclination relative to said workpiece in the course of a cutting pass according to inclination information included in said path program, means for obtaining a pair of control signals from said program inclination information, means for controlling said one of said second pair of servo motors for displacing said one of said guide members relative to its corresponding support arm in said first direction as a function of one of said signals, and means for controlling the other of said second pair of servo motors for displacing the other of said guide members relative to its support arm in said second direction as a function of the other of said signals.



4,363,950

ARRANGEMENT FOR ELECTROSPARK WORKING OF INTERNAL CONICAL SURFACES OF METAL PARTS

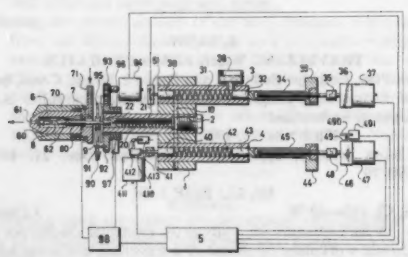
Ludvik Mateja, and Josef Prasek, both of Velke Mezirici, Czechoslovakia, assignors to Motor Jihlava narodni podnik, Jihlava, Czechoslovakia

Filed Dec. 4, 1980, Ser. No. 213,169

Claims priority, application Czechoslovakia, Dec. 5, 1979, 8427-79

Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 R **4 Claims**



1. In an arrangement for the electrospark erosive working of internal conical surfaces of metal workpieces having a hollow space with a high slenderness ratio, the hollow space being bounded by a cylindrical surface terminating in a conical surface coaxial therewith, the arrangement having an electrode for performing the working, a source of burning electrical impulses, means connecting said electrode to a first pole of such electrical source, the electrode terminating in a conical burning part and being provided with a shaft insulated from the workpiece, guiding means for the shaft of the electrode provided in the hollow cylindrical surface bounding the hollow space of the workpiece, means connecting the workpiece to the second pole of the source of burning electrical impulses, means for rotating the electrode, and means providing for a quick and a microadvance of the electrode relative to the workpiece, the improvement which comprises a holder, a first, hydraulic working cylinder, a second, hydraulic cylinder for a quick advance, and a third, hydraulic cylinder for the microadvance of the electrode, said second and third hydraulic cylinders being supported by the holder, conduit means interconnecting all of said hydraulic cylinders, a supporting piston slidably arranged in the first, hydraulic working cylinder, the electrode resting against this supporting piston, a second piston slidably arranged in the second hydraulic cylinder, a first drive for the quick advance, a third piston slidably arranged in the third hydraulic cylinder, a second drive for the microadvance, compression springs provided in both cylinders for quick and microadvance, and a tension spring provided in the first, hydraulic working cylinder.

4,363,951

BOTH-SIDE SINGLE LAYER, HIGH SPEED SUBMERGED ARC WELDING PROCESS

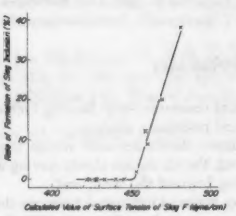
Atsushi Shiga, Chiba, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 4, 1981, Ser. No. 240,507

Claims priority, application Japan, Feb. 17, 1981, 56-20831

Int. Cl.³ B23K 9/18

U.S. Cl. 219—73 **3 Claims**



1. In a process for both-side single layer, high speed submerged arc welding of steel plate for use in low-temperature applications such as steel pipes or other steel structures and containing up to 0.1 wt% of carbon, up to 0.35 wt% of silicon, 0.5 to 2.0 wt% of manganese, 0.01 to 0.1 wt% of aluminum and not more than 0.010 wt% of nitrogen with a welding flux and a welding wire, the improvement in which said welding flux comprises 20 to 30 wt% of SiO_2, less than 25 wt% of at least one of TiO_2 and ZrO_2, 10 to 20 wt% of CaO, less than 10 wt% of at least one of MnO and MgO, not more than 10 wt% of Al_2O_3 and 20 to 40 wt% in total of CaF_2 and BaO each being not more than 20 wt%, wherein a total amount of acidic components ($SiO_2\% + TiO_2\% + ZrO_2\%$) is 30 to 45 wt%, a total amount of basic components ($CaO\% + MgO\% + MnO\%$) is 20 to 30 wt% and a weight ratio of the total amount of basic components to the total amount of acidic components is within a range of 0.5 to 0.8; said these components being compounded so that a surface tension F of slag is not more than 450 dyne/cm as calculated from the following equation (1):

$$F = 285\times[SiO_2] + 380\times[TiO_2] + 470\times[ZrO_2] + 640\times[Al_2O_3] + 653\times[MnO] + 512\times[MgO] + 602\times[CaO] + 400\times[CaF_2] + 366\times[BaO] \quad (1)$$

wherein a parenthesis represents a mol fraction of each component; said welding wire is composed of a steel wire containing up to 0.10 wt% of carbon, up to 0.4 wt% of silicon, 1.0 to 2.5 wt% of manganese, 0.015 to 0.05 wt% of aluminum, not more than 0.008 wt% of nitrogen, 0.10 to 0.18 wt% of titanium and 0.01 to 0.02 wt% of boron; said welding flux and welding wire

are used in combination with each other so that a carbon equivalent C_E of the resulting weld metal is 0.35 to 0.43% as calculated from the following equation (2):

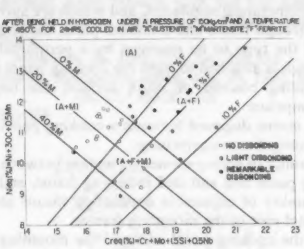
$$C_E(\%)=C(\%)+1/24Si(\%)+1/6Mn(\%)+\tfrac{1}{4}Mo(\%)+1/5Cr(\%)+1/40Ni(\%)+1/14V(\%) \quad (2)$$

to thereby obtain a weld metal containing not more than 0.008 wt% of nitrogen, 0.025 to 0.035 wt% of oxygen, 0.0015 to 0.0030 wt% of boron, 0.015 to 0.030 wt% of titanium and 0.010 to 0.030 wt% of aluminum and having a high low-temperature toughness without weld defects.

4,363,952
WELDING METHOD FOR STAINLESS STEEL WELD OVERLAY

Keizo Onishi; Takao Adachi; Akiyoshi Fuji; Ryuichi Chiba, all of Muroran; Katsuyuki Naitoh, Yokohama, and Hachiro Okada, Tokyo, all of Japan, assignors to Japan Steel Works, Ltd. and Chiyoda Chem. Engineering & Construction Co., both of Kanagawa, Japan

Filed Feb. 8, 1980, Ser. No. 119,772
Claims priority, application Japan, Feb. 9, 1979, 54-13286
Int. Cl.³ B23K *9/04, 35/34*
U.S. Cl. 219—76.12 **4 Claims**



1. In a method for the overlay welding of at least one weld layer onto the inner surfaces of pressure vessels made of carbon and low alloy steels as a base metal and used in processes in which hydrogen is contained within the vessels at elevated temperatures and under high pressure, the improvement which comprises welding a first layer weld overlay onto the inner surface of a pressure vessel, consisting essentially of up to 0.1 wt% C, up to 1.0 wt% Si, up to 2.0 wt% Mn, 7 to 12 wt% Ni, 12 to 17 wt% Cr, up to 1.0 wt% Mo, up to 0.1 wt% Al, the balance being Fe, said first layer weld overlay being welded at a welding current within the range of 1000–2800 amperes and at a welding speed varying between 5 to 50 cm/min. so as to produce a weld structure selected from (1) a martensite structure in an amount of 4% to 40% by area in an austenite matrix or (2) a martensite structure in an amount of 4% to 40% by area and a ferrite structure in an amount below 8% by area both within an austenite matrix.

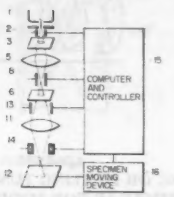
4,363,953
ELECTRON BEAM SCRIBING METHOD

Teiji Katsuta; Koji Nishiwaki, and Shinjiro Katagiri, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 1, 1980, Ser. No. 145,742
Claims priority, application Japan, May 4, 1979, 54-54192
Int. Cl.³ B23K *15/00*
U.S. Cl. 219—121 EK **2 Claims**

1. A method of scribing a predetermined pattern on the surface of a specimen with an electron beam of a rectangular cross-section having a long side and a short side, the surface of the specimen being divided into matrix imaginary regions, each of said matrix imaginary regions being composed of band-shaped imaginary regions each of which has a long side and a short side, and each of the band-shaped imaginary regions being composed of a plurality of fine imaginary regions, comprising the steps of:

(1) scanning each of predetermined ones of the band-shaped imaginary regions in each of predetermined ones of the matrix imaginary regions with the electron beam to electromagnetically deflect the same from one to another of predetermined ones of the fine imaginary regions in each of the predetermined band-shaped imaginary regions in a stepped manner in the direction of the long side of the rectangular cross-section of the electron beam and to electrostatically deflect the electron beam in each of the predetermined fine imaginary regions in the direction of the short side of the rectangular cross-section of the elec-



tron beam during periods between stepped deflections of the electron beam in the direction of the long side of the rectangular cross-section thereof, with the direction of the long side of the rectangular cross-section of the electron beam coinciding substantially with the direction of the long side of the band-shaped imaginary regions;

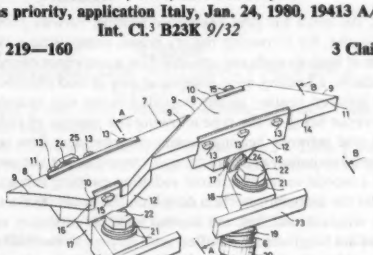
(2) electromagnetically deflecting the electron beam to expose each of the predetermined band-shaped imaginary regions in each of the predetermined matrix imaginary regions to said electron beam in a stepped manner; and

(3) two-dimensionally shifting the specimen to expose each of the predetermined matrix imaginary regions to the electron beam in a stepped manner.

4,363,954
DEVICE FOR THE BACK SUPPORT OF THE FIRST RUN WELD POOL IN THE AUTOMATIC BUTT-WELDING OF PIPES

Fernando Rinaldi, Guardamiglio, Italy, assignor to Saipem, S.p.A., Milan, Italy

Filed Dec. 5, 1980, Ser. No. 213,659
Claims priority, application Italy, Jan. 24, 1980, 19413 A/80
Int. Cl.³ B23K *9/32*
U.S. Cl. 219—160 **3 Claims**



1. A device for the back support of the first run weld pool in the automatic butt-welding of two pipes held together by the action of two facing circumferential sets of radial pistons of an internal connector, comprising:

a set of independent copper pads disposed in the form of a ring, wherein said pads are of trapezoidal shape arranged with their bases alternately inverted,

a set of support elements underlying and corresponding to said pads and onto which said pads are mounted,

support blocks resiliently supported by the set of radial pistons of said internal connector by radial thrust springs,

horizontal pins fixed to said support blocks which also idly support said elements and pads and thereby interconnect said pads and elements to said pistons and radial thrust springs, and

horizontal thrust springs supported by said horizontal pins which alternately act on opposing faces of said support elements to resiliently and constantly press said pads against each other along their inclined surfaces, to thereby provide a back support without gaps or spaces.

4,363,955

POST-BAKING OR HEATING TUNNEL-TYPE OVEN, IN PARTICULAR FOR FOOD PRODUCTS

Robert H. Gauthier, and Raymonde J. B. Frechou epouse Gauthier, both of 32, Ave. du General Michel Bizot, 75012 Paris, France

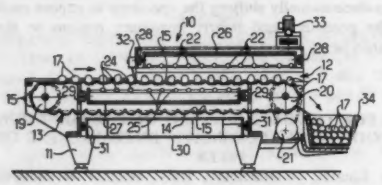
PCT No. PCT/FR80/00063, § 371 Date Dec. 20, 1980, § 102(e) Date Dec. 19, 1980, PCT Pub. No. WO80/02224, PCT Pub. Date Oct. 30, 1980

PCT Filed Apr. 18, 1980, Ser. No. 227,077

Claims priority, application France, Apr. 20, 1979, 79 10071

Int. Cl.³ F27B *9/06*

U.S. Cl. 219—388 **8 Claims**



1. An oven for post-baking or heating various product in particular, for browning bakery bread, comprising a chamber open at both its ends and traversed by a conveyor carrying the products, a loading zone situated at one of said chamber ends, and infrared heating means provided in the said chamber, the conveyor being of the type allowing the passage of radiations, and said infrared heating means comprising a first series of infrared radiation emitting tubes arranged above the conveyor and a second series of infrared radiation emitting tubes situated under the conveyor portion on which the products are carried, and wherein said first and second series of radiation emitting tubes are longitudinally shifted with respect to each other such that said second series of radiation emitting tubes comprises a set of radiation emitting tubes located upstream of the chamber in the direction in which the products are conveyed through the chamber and outside thereof in the zone of loading the products on the conveyor, and wherein the other ones of said radiation emitting tubes which are located inside said chamber being adapted to emit short-wave infrared radiation, whereas said set of radiation emitting tubes located upstream and outside of said chamber are adapted to emit longer wave infrared radiation, such as medium-wave infrared radiation, which is less dazzling to persons loading the product on said conveyor in said loading zone than short-wave infrared radiation.

4,363,956

COOKING PANEL UNIT FOR INSTALLATION IN WORK SURFACE

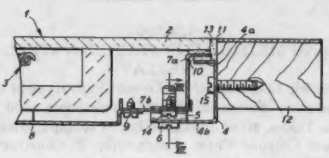
Herwig Scheidler, Mainz-Finthen, Fed. Rep. of Germany, and Günther Keller, Völs, Austria, assignors to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,055

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009961

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—464 **16 Claims**



1. In an improved glass-ceramic cooking panel unit having a glass-ceramic cooking plate overlying the remainder of the cooking unit containing the heating element assemblies, wiring, and temperature regulators, and which are surrounded by a side or trough frame and a bottom plate, the cooking panel unit is of the type to be received by a peripheral mounting frame which is attached to both the cooking panel unit and to a surrounding counter or work surface, the improvement which comprises:

biasing means disposed between a cooking panel unit and a mounting frame comprising:

a plurality of spring elements location between said cooking panel unit and said mounting frame, and

a plurality of adjustable connecting means attached the panel unit to the mounting frame,

whereby the cooking panel unit and the mounting frame are placed in a continuously height-adjustable, biased relationship.

4,363,957

HEATING APPARATUS WITH CHAR DETECTING AND HEATING CONTROLLER

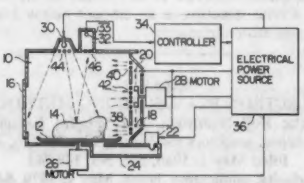
Hajime Tachikawa; Mitsuru Watanabe, both of Yokohama, and Kenjiro Yokoyama, Yokosuka, all of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan

Filed Dec. 3, 1979, Ser. No. 99,929

Claims priority, application Japan, Jan. 9, 1979, 54/1713; Jan. 9, 1979, 54/1714; Jan. 9, 1979, 54/1588[U]; Jan. 9, 1979, 54/1589[U]

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 **30 Claims**



1. In a heating apparatus provided with a heating chamber and heating means capable of heating an article accommodated within said heating chamber to such a degree as to produce charring, the improvement comprising:

light source means for illuminating a surface of said article accommodated within said heating chamber with visible light rays;

optical sensor means for sensing the illumination intensity reflected from the surface of said article;

means for actuating said heating means and said light source means to initiate a heating cycle;

means for detecting the output of said optical sensor means at an initial heating phase in every heating cycle subsequent to operation of said actuating means and for generating a reference value which is proportional thereto;

memory means for storing said reference value;

comparing means for comparing the content of said memory means with the output of said optical sensor means which varies with time as the heating proceeds; and

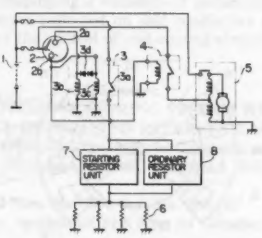
control means for controlling the heating operation of said heating means in response to an output signal from said comparing means.

4,363,958

PREHEATING APPARATUS FOR DIESEL ENGINES

Akihiro Kobayashi, Aichi; Masashi Kida, and Yoji Kato, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 26, 1981, Ser. No. 228,552
Claims priority, application Japan, Jan. 29, 1980, 55-9556
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—505 9 Claims



1. A preheating apparatus for Diesel engines, comprising:

a glow plug disposed in a cylinder-head of an engine;

starting resistor means connected between a voltage source and said glow plug, said starting resistor means including a resistance body principally composed of barium titanate for exhibiting a resistance characteristic of a positive resistance temperature coefficient and for abruptly increasing its resistance value at a predetermined temperature;

ordinary resistor means connected in parallel with said starting resistor means, and disposed in an intake air passage of said engine for heating the intake air flowing therethrough;

said starting resistor means exhibiting a resistance value smaller than that of said ordinary resistor means when a temperature of said glow plug is relatively low, and said starting resistor means exhibiting a resistance value larger than that of said ordinary resistor means when the temperature of said glow plug is relatively high; and

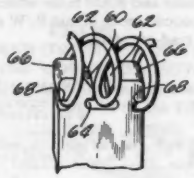
a cylindrical cover made of a material having good heat insulating properties, said cylindrical cover being disposed in said intake air passage and surrounding said ordinary resistor means for preventing the transmission of the heat from said ordinary resistor means to a wall of said intake air passage.

4,363,959

STAND-OFF FOR RESISTANCE WIRES

Merlyn F. Cottrell; Harold Tegelman, Jr.; Ronald E. Holmes, all of Winneconne, and John R. Hofferber, Weyauwega, all of Wis., assignors to E. R. Wagner Manufacturing Company, Milwaukee, Wis.

Filed Aug. 31, 1981, Ser. No. 297,726
Int. Cl.[3] H05B *3/06*
U.S. Cl. 219—532 4 Claims



1. A heater assembly comprising,

a frame,

an electrically insulating support mounted on the frame with an end spaced from the frame,

an electric resistance heating coil mounted on the end of the support, the loops of the coil being axially spaced by a predetermined distance when the coil is unstressed,

said support end having a central inverted T-shaped opening forming retention surfaces located at the ends of the cross bar of the T,

said support retention surfaces being engaged by loops of the coil and spaced so the coil loops must be deflected to be mounted on or disengaged from the retention surfaces,

said retention surfaces being operative to restrain the coil against axial movement and movement away from the support,

said support end including cam surface means leading into the T-shaped opening and operative as the coil is moved toward the retention surfaces to deflect the coil loops from their unstressed spacing,

the axis of the coil being transverse the retention surfaces during and after mounting the coil on the support,

the support end including a stop surface engaged by a coil loop during assembly to limit movement of the coil onto the support while positioning coil loops to engage the retention surfaces.

4,363,960

PHOTOELECTRIC WRITE-ONLY SEQUENCE CONTROLLER

Yoshikazu Kuze, 31-3, Higashi Magome 1-chome, Ohta-ku, Tokyo, 143, Japan

PCT No. PCT/JP80/00031, § 371 Date Oct. 28, 1980, § 102(e) Date Oct. 28, 1980, PCT Pub. No. WO80/01854, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 27, 1980, Ser. No. 201,392
Int. Cl.[3] G06K *19/06, 7/14;* G11C *7/00*
U.S. Cl. 235—454 8 Claims

1. A photo-electric write-only sequence controller whereby a transparent program sheet bearing information is inserted into, passed through and extracted from said controller, which comprises:

a sheet reading device defining a path along which said program sheet passes which includes a plurality of light-emitting elements disposed in the lateral direction at the entrance of said path and a plurality of light-receiving elements, each of which is corresponding to each of said light-emitting elements and arranged to generate write clock pulses data output and R/W signals when light from the corresponding light-emitting elements is interrupted by information on said program sheet;

a RAM for memorizing said data in synchronism with said write clock pulses;

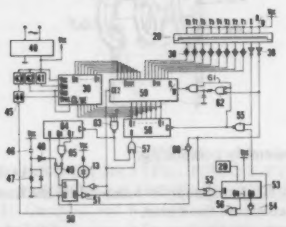
an EPROM detachably connected with terminals for said RAM;

means for generating read clock pulses;

a first binary counter for counting said write clock pulses and for addressing said RAM and EPROM;

a second binary counter for counting said read clock pulses and for generating program pulses for writing data in said EPROM;

a first gate means responsive to a first mode of said R/W signal to render said RAM in the write-in state and responsive to the second mode of said R/W signal to change said RAM to a read-out state;



a second gate means responsive to a first mode of said R/W signal effective to set said first binary counter and to reset said second binary counter and to render said RAM in an enable state;

a third gate means for generating a signal for stopping the reading operation when the count of said binary counter reaches a predetermined number;

whereby data in said program sheet is written in said RAM as said program sheet is passed through said sheet-reading device and data stored in said RAM is automatically written in said EPROM after the program sheet has been passed through and extracted from said sheet-reading device.

4,363,961

AUTOMATIC FOCUSING APPARATUS

Kazuo Okada, and Mitsushige Kondo, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

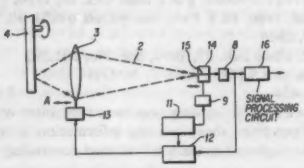
PCT No. PCT/JP78/00052, § 371 Date Aug. 16, 1979, § 102(e) Date Jun. 20, 1979, PCT Pub. No. WO79/00400, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 13, 1978, Ser. No. 154,399

Claims priority, application Japan, Dec. 16, 1977, 52-152086

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **5 Claims**



1. An automatic focusing apparatus which comprises a semiconductor ray source; focusing means for focusing a ray of said semiconductor ray source on an object substrate and focusing the reflective ray to an emitting part of said semiconductor ray source; driving means for vibrating, at a predetermined frequency, a position of a ray spot formed by focusing by said focusing means in optical axial direction; an oscillator for exciting said driving means at a predetermined frequency; a phase detector which detects a variation of output characteristics of said semiconductor ray source induced by the reflective ray reflected by said object substrate to carry out phase detection under using the output of said oscillator as the reference signal; and an actuator which controls said focusing means depending upon the output of said phase detector to coincide the focal point of said ray spot with the surface of said object substrate.

4,363,962

FOCUSSING APPARATUS WITH PLURAL EMITTER-DETECTOR PAIRS

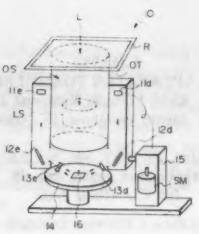
Takao Shida, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

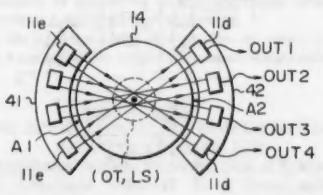
Filed Dec. 23, 1980, Ser. No. 219,495

Claims priority, application Japan, Dec. 27, 1979, 54-169182

Int. Cl.³ G01B *11/06*

U.S. Cl. 250—201 **4 Claims**





1. In a focussing apparatus comprising a photo emitter for projecting a light beam onto an object to be focussed on; a photo detector for receiving the light beam reflected from the object; an optical system having a lens for focussing a pattern on the object; and a means for correctly positioning the focal point of the lens on the object by adjusting the relative distance between the object and the focal point in response to the intensity level of the reflected light beam detected by the photo detector, the improvement which comprises a plurality of optical sets distributed around the object, each of which sets is comprised of a photo emitter and a corresponding oppositely disposed photo detector, both located symmetrically with respect to the object, and are distributed around the object.

4,363,963

SOLID STATE PHOTO-ELECTRIC CONVERTING DEVICE AND SOLID STATE IMAGING APPARATUS EMPLOYING IT

Fumihiko Ando, Yokohama, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Feb. 26, 1980, Ser. No. 124,697

Claims priority, application Japan, Mar. 8, 1979, 54-27151

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **20 Claims**

1. A photo-electric converting device, wherein an amount of

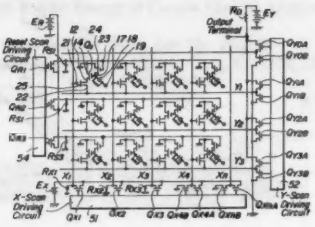
an incoming light is converted into an electric signal, comprising

a solid state photo-electric converting means consisting of at least

a photo-transparent electrode layer,

at least one photo-electric converting layer and

a conductive electrode layer covering substantially the same area as said photo-electric converting layer for collecting signal charges converted from the incoming light in said at least one photo-electric converting layer, and



a solid state amplifier means consisting of at least

a control electrode layer being in conjunction with said conductive electrode layer for controlling said solid state amplifier means with response to said signal charges collected on said conductive electrode layer, and

a plurality of semi-conductor layers including at least one sectional semi-conductor layer, conjugated with each other for amplifying a variation of an amount of said signal charges collected on said conductive electrode layer under the control of said control electrode layer.

4,363,964

INCREMENTAL MEASURING SYSTEM WITH SELECTIVELY DESIGNATED REFERENCE MARKS

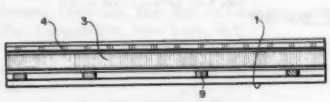
Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,152

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948854

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—237 G **10 Claims**



1. In an incremental measuring system including a grid scale; an electronic counter; a plurality of fixed reference marks along the grid scale; a movable scanning unit; sensor means, included in the scanning unit, for generating an electrical impulse in conjunction with the reference marks for control of the electronic counter; at least one switching member mounted adjacent the scale for selectively designating a subset of the fixed reference marks needed for control purposes; and means, responsive to the at least one switching member, for selectively enabling the sensor means only for the designated subset of the reference marks, the improvement comprising:

an impulse generating circuit, connected to the sensor means for generating the electrical impulse, said impulse generating circuit having two input terminals;

a first photosensitive element included in the sensor means and connected across the two input terminals of the impulse generating circuit, said first photosensitive element positioned to scan the plurality of fixed reference marks;

a second photosensitive element, included in the enabling means and connected in parallel with the first photosensitive element; and

means for illuminating the second photosensitive element;

said switching member operating selectively to alter illumination of the second photosensitive element by the illuminating means in order selectively to enable the sensor means only for the designated subset of the reference marks.

4,363,965

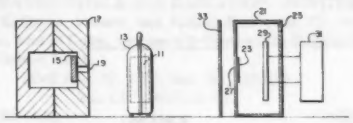
DETECTION AND IDENTIFICATION METHOD EMPLOYING MOSSBAUER ISOTOPES

Robert K. Soberman; Kenneth Krevitz, and Louis L. Pytlewski, all of Philadelphia, Pa., assignors to The Franklin Institute, Philadelphia, Pa.

Filed Oct. 3, 1980, Ser. No. 193,723

Int. Cl.³ G09K *3/00*

U.S. Cl. 250—302 **17 Claims**



1. A method for indicating the presence of a non-radioactive, inert tagging substance in a carrier material, said tagging substance comprising a Mossbauer isotope, the method comprising the steps of:

(a) providing nuclear detector means including a Mossbauer isotope-containing detecting substance, which is identical to the tagging substance, and sensing means responsive to the presence of said tagging substance in said carrier material, provided that the Mossbauer isotope of said tagging substance is in a state of resonance excitation and causes excitation of the Mossbauer isotope of said detecting substance, said sensing means being operatively associated with indicator means for indicating whether or not said sensing means has sensed radiation emitted from the excited Mossbauer isotope of said detecting substance;

(b) exposing said carrier material to said detector in position to activate said sensing means; and

(c) irradiating said carrier material with radiation causing resonance excitation of the Mossbauer isotope of said tagging substance, if present in said carrier material, to thereby indicate the presence or absence of said tagging substance in said carrier material.

4,363,966

DETECTION SYSTEM FOR DISTINGUISHING BETWEEN VOIDS AND FOREIGN PARTICLES IN MATERIALS AND METHOD

Peter K. Cheo, West Hartford, Conn., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 22, 1980, Ser. No. 189,025

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—339 **12 Claims**

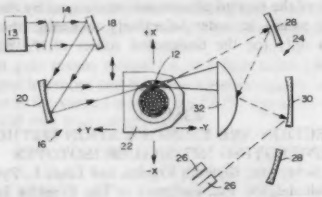
1. A system for detecting the presence of particles or voids in a materials of a specific type capable of passing a particular beam of radiation therethrough, said system comprising:

(a) means for producing said beam of radiation;

(b) means for directing said beam into said material along a predetermined path incident to said material such that

(i) any portion of said beam which passes through said material unobstructed by voids or foreign particles within said material does so along predictable non-impinging paths, and

(ii) any portion of said beam which impinges one of said voids or foreign particles as it passes through said material is scattered thereby along scattering paths which define an overall scattering pattern distinctly characteristic of whether the impinged void or foreign particle is generally spherical or non-spherical in shape; and



(c) means for detecting said scattered radiation, if any, and distinguishing between whether the impinged upon void or foreign particle is generally spherical or non-spherical in shape.

4,363,967

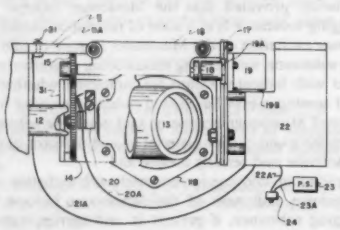
METHOD AND APPARATUS FOR FAR INFRARED DETECTION

Edward J. Efkeman, Woodbridge; Elliott Lloyd, Lorton; Howard K. Dickson, and James R. Adamson, Jr., both of Alexandria, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 7, 1980, Ser. No. 194,656

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—339 **10 Claims**



1. In combination with a thermal viewer with an objective lens and a far infrared detector sensitive to a broad band of infrared frequencies, a subsystem for distinguishing one cloud of a first gaseous compound from an alternative cloud formed from a second gaseous compound when backlighted by a substantially uniform spectral distribution of light in the far infrared, comprising:

a filter wheel mounted in said viewer between said objective lens and said detector having at least three apertures therein;

one of said apertures being arranged to pass all far infrared frequencies in said broad band;

each remaining aperture containing a filter which transmits only one of a group of different narrow bands of frequencies; and

a stepping motor means mounted on said viewer to move said filter wheel so that said apertures are sequentially centered on the optical axis of said lens, the stepping period of said motor means being less than one tenth of a second.

4,363,968

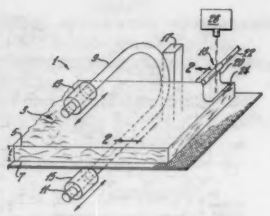
METHOD AND APPARATUS FOR DETERMINING THE BINDER CONTENT IN A FIBROUS MAT

Paul T. McGowan, Granville, and Raymond E. Wright, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 58,636, Jul. 19, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 290,650

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—339 **7 Claims**



1. A method for measuring binder characteristics in a mat of binder-coated glass fibers, said binder having a cure indicator constituent, the amount of which changes as said binder is cured, comprising radiating said mat and said binder with first, second and third energies,

said first energy having a wavelength which is absorbed by said binder, but is substantially not absorbed by said cure indicator constituent,

said second energy having a wavelength which is absorbed by said binder including said cure indicator constituent, and

said third energy having a wavelength which is substantially not absorbed by either said binder or said cure indicator constituent;

sensing the amount of said first, second and third energies transmitted through said mat; and,

determining the amount of binder contained in said mat from the sensed energies.

4,363,969

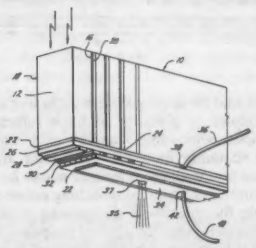
LIGHT SWITCHED SEGMENTED TOMOGRAPHY DETECTOR

Poen S. Ong, 9 Stonegate, Houston, Tex. 77024

Filed Jul. 16, 1980, Ser. No. 169,297

Int. Cl.³ G01T *1/20, 1/22*

U.S. Cl. 250—367 **10 Claims**



1. A detector comprising:

scintillator means for converting X-ray photons received at each of a plurality of different areas of the surface of said detector to a proportionate number of light photons;

duo-photoconductive means composed of an amorphous material for converting said light photons to a proportion-

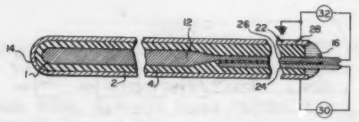
ate amount of electric charge and for storing said electric charge; and

random access switching means for selectively connecting said stored electric charge arising from X-ray photons received at any one of said different areas of the surface of said detector to a single amplifier.

4,363,970
SELF-POWERED NEUTRON FLUX DETECTOR ASSEMBLY

Colin J. Allan, and Ian L. McIntyre, both of Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed May 19, 1980, Ser. No. 150,809
Claims priority, application Canada, Aug. 13, 1979, 334534
Int. Cl.³ G01T *3/00*
U.S. Cl. 250—390 **8 Claims**



1. A self-powered neutron flux detector assembly which provides a measure of the average neutron flux along the length of the detector comprising:

(a) an emitter electrode of substantially circular cross section, at least of the order of 0.9 mm in diameter,

(b) a tubular collector electrode enclosing and coaxial with the emitter electrode, and

(c) dielectric material between the said electrodes, and wherein the improvement comprises,

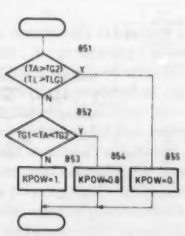
(d) the emitter electrode is of metal selected from the group consisting of iron, nickel, titanium, chromium and alloys based on at least one of these elements, except for impurities, so that at least of the order of 90% of the total electrical current that will be induced in the detector is prompt and is derived from (n,γ,e) interactions in said metal, and

(e) the collector electrode is of metal selected from the group consisting of iron, nickel, titanium, chromium, zirconium and alloys based on at least one of these materials, except for impurities.

4,363,971
METHOD OF AND APPARATUS FOR CONTROLLING THE ELECTRIC POWER APPLIED TO A ROTARY-ANODE X-RAY TUBE

Rudolf Ochmann, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 167,908
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927207
Int. Cl.³ H05G *1/26*
U.S. Cl. 378—110 **16 Claims**

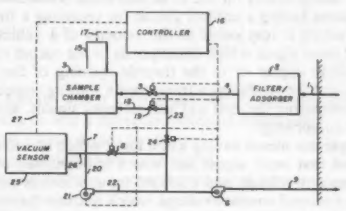


1. A method of controlling the electric power applied to a rotary anode X-ray tube in an X-ray generator in dependency of the anode temperature of the X-ray tube which includes the steps of continuously determining the anode disc temperature, comparing said temperature with a first limit value and automatically reducing the electric power applied to the X-ray tube when the anode disc temperature exceeds the first limit value, the improvement comprising automatically reducing the power fed to the X-ray tube to a permissible predetermined constant fraction of the power each time, wherein the power reduction takes place during intervals between exposures; comparing the anode disc temperature with a second limit value which is higher than the first limit value (T_{g1}) and reducing the tube power to a second predetermined constant fraction, when the anode disc temperature exceeds the second limit value (T_{g2}) during an interval between exposures; continuously determining the temperature of the rotary anode bearings to monitor the mean value in time of the applied electric power; comparing said bearing temperature with a third limit value (T_{lg}), and inhibiting the start of an exposure for as long as the bearing temperature determined exceeds the third limit value.

4,363,972
WIDE RANGE NOBLE GAS RADIATION MONITOR

Harry S. Kuhlman, Vernon, and Jeffrey R. Wyvill, III, South Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 10, 1980, Ser. No. 139,034
Int. Cl.³ G01N *21/01*
U.S. Cl. 250—430 **7 Claims**



1. A sample and detection system for noble gas emission of a nuclear process, including,

a sample chamber adapted to receive effluent containing a quantity of noble gases to be detected and manifested,

a first conduit circuit including the sample chamber flowing the effluent containing a quantity of noble gases to be detected and manifested,

a first pump connected to the first conduit circuit energized to draw the effluent sample through the chamber,

a second conduit circuit including the sample chamber flowing the effluent containing the noble gases to be detected and manifested,

a second pump connected to the second conduit circuit energized to draw the effluent sample through the chamber,

a detector of noble gases connected to the chamber and establishing an output signal in accordance with the count rate of the detector,

a first valve in the first conduit circuit upstream of of the chamber,

a second valve in the second conduit circuit upstream of the chamber,

and a controller connected to receive the output signal of the detector and the first and second valves and the second pump to close the first valve and open the second valve a predetermined degree and actuate the second pump,

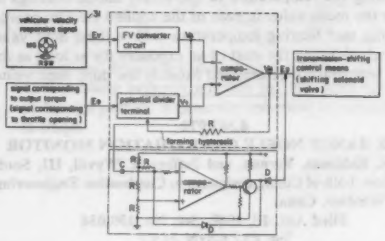
whereby the controller opens the first valve during the time the detector responds to a first range of noble gases in the effluent passed through the chamber and closes the first valve and opens the second valve and energizes the second pump when the detector responds to a second range

of noble gas quantities in the effluent greater than the first range.

4,363,973
SAFETY CIRCUIT OF AUTOMATIC TRANSMISSION CONTROL SYSTEM

Shoji Kawata, Okazaki; Tomoaki Nishimura, Toyota; Naoji Sakakibar, Chiryu; Nobuyuki Imai, Aichi; Hiroyuki Amano, Chiryu, and Shigemitsu Hamajima, Obu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 22, 1981, Ser. No. 304,626
Claims priority, application Japan, Sep. 24, 1980, 55-132640
Int. Cl.³ H02G *3/00*
U.S. Cl. 307—10 R **6 Claims**



1. A safety circuit for use in an automatic transmission control system having a control circuit for receiving a first input signal which is responsive to the velocity of a vehicle and a second input signal which corresponds to the output torque of the vehicle engine or to the throttle opening of the vehicle engine, and for producing a transmission shifting control signal upon comparing the first and second input signals, said safety circuit comprising:

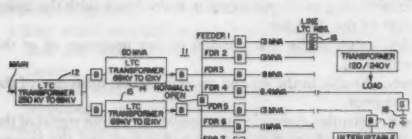
comparator means having a first input which is connected to said first input signal and which is connected to a first constant voltage, and a second input which is connected to a second constant voltage which is lower than said first constant voltage, said comparator detecting the difference between the two input voltages applied thereto and producing an output in response to an abrupt loss of said first input signal;

switch means responsive to the output of said comparator for controlling the transmission shifting control signal such that the vehicle transmission is shifted to a high speed gear ratio.

4,363,974
METHOD AND APPARATUS FOR PROVIDING SIGNALS FROM LTC TRANSFORMER TO ELECTRICAL DEVICES

Robert W. Beckwith, 5728 Oakhurst Dr., Seminole, Fla. 33542

Filed Apr. 6, 1981, Ser. No. 251,377
Int. Cl.³ G05B *13/02, 11/32*
U.S. Cl. 307—40 **12 Claims**

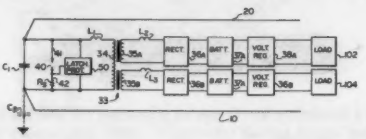


6. A load tap changing transformer system for use with a power distribution system having a plurality of electrical devices connected thereto, wherein the transformer has a plurality of electrical taps for providing output power at voltages dependent on the variable tap position setting of said transformer comprising, in combination, means for enabling said transformer to provide a coded output comprising time-dependent voltage levels, means for providing a signal to cause said transformer to provide said coded output, signal-receiving and decoding means associated with said devices for enabling said devices to be selectively activated in response to a selected code, whereby the power status of selected ones of said devices may be controlled.

4,363,975
DIRECT CURRENT POWER SUPPLY

Jay E. Beattie, Indian Head, Canada, assignor to Saskatchewan Power Corporation, Regina, Canada

Filed May 18, 1981, Ser. No. 264,068
Claims priority, application Canada, May 30, 1980, 353231
Int. Cl.³ H02J *3/00*
U.S. Cl. 307—150 **17 Claims**



1. A power supply for receiving power input from a high voltage transmission line and providing a direct current power output to an electrical load operated at or near the potential of said transmission line remote from electrical ground, said power supply comprising:

(a) a metallic structure supported in proximity to said transmission line remote from electrical ground;

(b) capacitor means electrically connected between said transmission line and said metallic structure for providing in response to the presence of high voltage on said transmission line an alternating current voltage, the magnitude of which alternating current voltage is dependent upon the capacitance of said capacitor means and upon stray capacitance between said metallic structure and electrical ground; and,

(c) power conditioning means electrically connected to said capacitor means for receiving said alternating current voltage and converting such voltage into a direct current voltage for the supply of direct current power to said electrical load.

4,363,976
SUBINTERVAL SAMPLER

Timothy R. Minor, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 19, 1981, Ser. No. 226,321
Int. Cl.³ G11C *27/02*
U.S. Cl. 307—353 **27 Claims**

1. A subinterval sampler for sampling short duration pulses with slower speed processing hardware than would otherwise be required, comprising:

a pair of pulse detectors connected in parallel from an input, each detector having an active interval for pulse detection and an inactive interval for clearing said detector, the active intervals having an overlap period and the inactive intervals being nonconcurrent;

switch means alternately outputting one and then the other of said detectors; and

sample and hold means receiving the output of said switch means.

4,363,977

DEVICE FOR DISCRIMINATING BETWEEN TWO VALUES OF A SIGNAL WITH DC OFFSET COMPENSATION

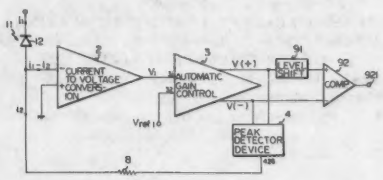
Toshitaka Tsuda, Kawasaki; Kazuo Murano, Tokyo; Kazuo Yamaguchi, Hiratsuka; Takafumi Chujo; Norio Murakami, both of Yokohama, and Motohide Takahashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 20, 1981, Ser. No. 236,609

Claims priority, application Japan, Feb. 20, 1980, 55/19992; Jun. 26, 1980, 55/87060

Int. Cl.³ H03K *5/153, 5/01*

U.S. Cl. 307—358 **5 Claims**



1. A device for discriminating between two values of a signal using DC offset compensation, comprising:

an automatic gain control circuit, having an input, for receiving an incoming signal and for generating both a same polarity signal having the same polarity as said incoming signal and an opposite polarity signal having opposite polarity to that of said incoming signal;

a peak detector device, operatively connected to said automatic gain control circuit, for receiving said same polarity signal and said opposite polarity signal and for generating and controlling the value of a feedback current;

a feedback path for connecting the output of said peak detector device with the input of said automatic gain control circuit;

a level shift circuit, operatively connected to said automatic gain control circuit, for generating a shifted same polarity signal by shifting the level of said same polarity signal; and

a comparator, operatively connected to said level shift circuit and said automatic gain control circuit, for receiving said shifted same polarity signal and said opposite polarity signal through said level shift circuit and for generating a two value discriminated output signal in dependence upon said shifted same polarity signal and said opposite polarity signal, wherein the value of said feedback current is regulated so that the maximum value of one of said same polarity signal and said opposite polarity signal coincides with the minimum value of the other of said two polarity signals.

4,363,978

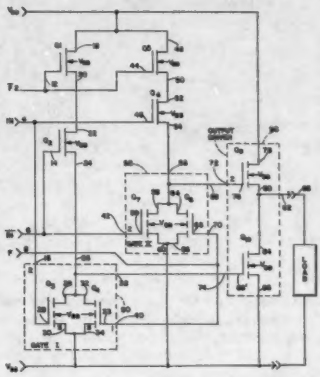
REDUCED POWER TRISTATE DRIVER CIRCUIT

Gary L. Heimbigner, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 31, 1980, Ser. No. 174,089

Int. Cl.³ H03K *19/092, 3/26*

U.S. Cl. 307—451 **17 Claims**



1. A tristate driver circuit adapted to operate between a power source and a reference potential comprising:

a signal source means having

means providing an input signal,

means providing a complement input signal,

means providing a float input signal,

means providing a complement float input signal;

a first gate; a second gate, each said first and second gate having:

a power gate input terminal adapted to be coupled to said power source,

a first signal gate input terminal,

a second signal gate input terminal, and

a gate output terminal;

a first buffer switch, a second buffer switch, each said first and second buffer switches having:

a control electrode and a conduction path connected between said power source and said first and second gate power input terminals respectively;

an output driver having:

a first signal driver input terminal connected to said first gate output terminal,

a second signal driver input terminal connected to said second gate output terminal,

a driver output terminal;

said first gate first signal gate input terminal being connected to said means providing a float input signal and to said second gate first signal gate input terminal,

said first gate second signal gate input terminal being connected to said means providing an input signal and to said second buffer switch control electrode,

said second gate second signal gate input terminal being connected to said means providing a complement input signal and to said first buffer switch control electrode; and

means for interrupting power to said first and second conduction paths of said first and second buffer switches responsive to a signal from said complement float input signal means.

4,363,979

EVALUATION CIRCUIT FOR ELECTRICAL SIGNALS

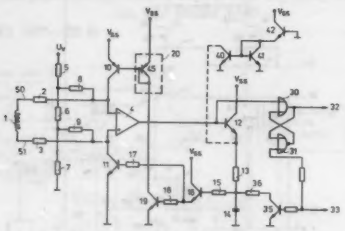
Gunter Hönig, Ditzingen; Joachim Braunger, Remseck; Imanuel Krauter, Erbstetten, and Rainer Bone, Vaihigen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,505

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948198

Int. Cl.³ H03L 5/00; H03K 13/02, 9/06

U.S. Cl. 307—519 8 Claims



1. An evaluation circuit for providing processible binary signals from electric signals supplied by an inductive transducer in a manner dependent on the speed of a rotating shaft and having an amplitude increasing with the speed of rotation of said shaft, said circuit comprising:

means for coupling a pair of terminals of said transducer supplying the output signal thereof in phase opposition respectively to the inverting and non-inverting inputs of a comparator (4), said coupling means including series resistances (2,3) each connected between one of said terminals and one of said comparator inputs;

a pair of electrically controllable resistances controllable in the magnitude of their respective resistance, values connected between respective comparator inputs and different constant potentials;

capacitor means (14) connected at the comparator output for charging thereof in a manner dependent upon the output signal of said comparator, and

means connected between said capacitor means and said resistances (10,11) for reducing said resistance values thereof as the charge voltage of said capacitor increases,

whereby said controllable resistances and said series resistances are caused to cooperate to reduce the effective voltage at said inputs of said comparator by voltage division with increasing speed of said shaft.

4,363,980

LINEAR MOTOR

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 45,822, Jun. 5, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,536

Int. Cl.³ H02K 33/00

U.S. Cl. 310—15 16 Claims

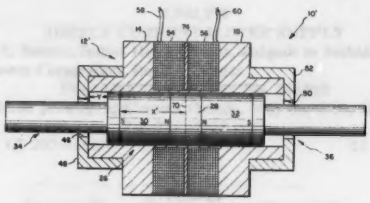
1. A linear motor comprising:

means formed from a non-magnetic material for supporting electrically conductive means, said supporting means including means defining a passageway extending axially of said supporting means;

an armature mounted within said passageway for axial movement relative to said supporting means between first and second positions, said armature including a pair of permanent magnets and a core, said core being located between said first and second permanent magnets with common poles of said magnets in engagement with opposite axial end faces of said core thereby forming an armature having effective common poles at the axial ends of said armature and an effective pole of opposite polarity located at a point substantially one-half the distance between the ends of said core;

electrically conductive means wound upon said supporting means for moving said armature from said first position to said second position upon being electrically energized;

output means mounted on one end of said armature for transmitting the movement of said armature to an apparatus to be driven thereby;



means for limiting the movement of said armature along said passageway upon energization of said electrically conductive means; and

means formed from a ferrous material mounted on said supporting means substantially in alignment with one of the effective poles of said armature when said armature is in said first position for automatically returning said armature to said first position upon deenergization of said electrically conductive means.

4,363,981

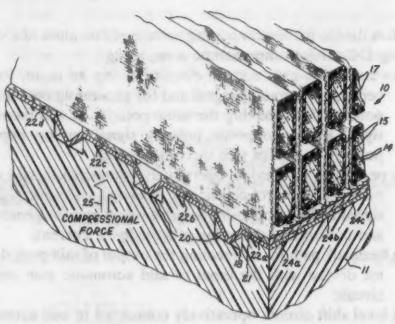
MEANS TO REDUCE FRICTIONAL HEATING OF A SUPERCONDUCTING WINDING AT AN INTERFACE WITH ITS SUPPORT STRUCTURE

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 1, 1981, Ser. No. 259,388

Int. Cl.³ H02K 9/00

U.S. Cl. 310—52 17 Claims



1. Improved means to reduce heating of a monolithic superconducting winding due to friction generated at an interface between said superconducting winding and a support structure for said winding, said support structure comprising a material having a high electrical resistivity whereby eddy current heating therein is limited to a tolerable level, said support structure having a first surface held under a compressional force against said superconducting winding and having a plurality of spaced apart helium cooling channels in the first surface thereof, said improved means comprising:

(a) compliant sheet material having a low shear modulus and having first and second sides, said first side being bonded

to an external surface of said superconducting winding; and

(b) high thermal conductivity sheet metal having first and second sides with said first side disposed in contact with said second side of said low shear modulus sheet material and said second side thereof disposed in contact with said first surface of said support structure, and having portions thereof respectively disposed within said plurality of said helium cooling channels.

4,363,982

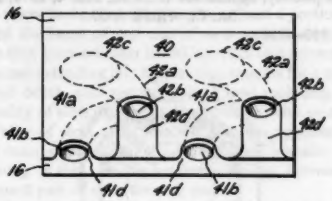
DUAL CURVED INLET GAP PICKUP WEDGE

Christopher A. Kaminski, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,471

Int. Cl.³ H02K *1/32*

U.S. Cl. 310—61 **5 Claims**



1. A wedge for use in the rotor slots of dynamoelectric machines in conjunction with conductor bars within said slots especially such machines employing a gap pickup system for circulating cooling fluid through the rotor, said wedge comprising:

an elongate body having ridge portions extending longitudinally outward along the sides thereof for insertion and retention of the wedge in slots in the rotor;

said wedge having a plurality of pairs of bidirectionally curved passages therein, to direct cooling fluid to respective cooling passages in said conductor bars and impart to said fluid flow directions having both a radially inward component and a longitudinal component, said passages each having an entrance along an upper portion of said wedge, said entrances having scoop-shaped port holes for directing a cooling fluid into said passages upon rotor turning;

said passages terminating in exit openings on the bottom side of said wedge, a first of said passages of each of said pairs being curved to direct the flow of cooling fluid in a first exit direction wherein the longitudinal component thereof is in a first direction and the second of said passages being curved to direct flow of cooling fluid in a second exit direction, wherein the longitudinal component thereof is opposite in direction to the longitudinal component of said first fluid flow.

4,363,983

AUTOMOTIVE-TYPE VOLTAGE REGULATOR AND SUPPORT ASSEMBLY STRUCTURE

Manfred Frister, Schwieberdingen; Stefan Renner, Leonberg-Silber; Friedhelm Meyer, Illingen, and Klaus H. Christ, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,413

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938275

Int. Cl.³ H02K *11/00*

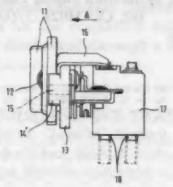
U.S. Cl. 310—68 R **8 Claims**

1. Voltage regulator and support assembly comprising

a regulator structure (11) having an essentially cylindrical housing defining a flat end surface;

a carrier plate (13) having a plan outline in one direction which is larger than the surface of the regulator structure and narrower than the diameter of the cylindrical housing, the regulator structure being secured to said plate with the flat end surface positioned parallel thereto;

raised attachment bosses (14) formed on the carrier plate



laterally of the surface of the regulator structure, and through-bores (15) extending through said bosses, whereby the bosses will form reinforced attachment eyes for the carrier plate and the voltage regulator structure secured thereto, while leaving part of said surface exposed to cooling air.

4,363,984

DIGITALLY CONTROLLED BRUSHLESS MOTOR

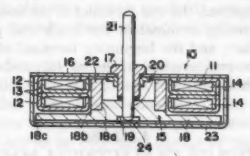
Michihiro Torii, Hamamatsu; Masanao Okuda, Kosai, and Yuzuru Suzuki, Shizuoka, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 198,235

Claims priority, application Japan, Oct. 18, 1979, 54-134637

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—156 **8 Claims**



1. A pulse-controlled brushless motor of constant speed, comprising:

a rotor rigidly mounted on a rotary shaft, said rotor having an integral inertia ring,

a stator having driving windings and inner and outer yokes, said yokes each having a plurality of polar teeth projecting inwardly at a constant interval, said windings being mounted within said inner and outer yokes,

first means for rotatably supporting at least one of said rotor and said stator, said first means having a casing and a bearing at the center of said casing, to thereby rotatably support an end of said rotary shaft,

second means for rotatably supporting the other one of said rotor and said stator, said second means having a bearing for rotatably securing said shaft, and a cover member fixed to said bearing of the second means, said cover member and said casing shielding a magnetic flux of said yokes, and

an annular magnet concentric with said rotary shaft and fixed to said rotor, said magnet being permanently magnetized in a multi-pole fashion to have a plurality of north and south poles alternately arranged along its circumference,

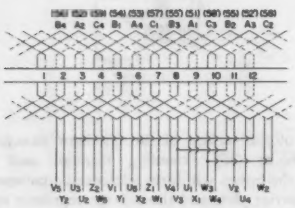
whereby said rotor is rotated smoothly and constantly when electric pulses of a predetermined frequency are supplied to said driving windings.

4,363,985

POLE CHANGE DYNAMO-ELECTRIC MACHINES

Satoshi Matsuda, and Etsuo Kiyohara, both of Mie, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 11, 1981, Ser. No. 233,315
Claims priority, application Japan, Feb. 20, 1980, 55-19215
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 4 Claims



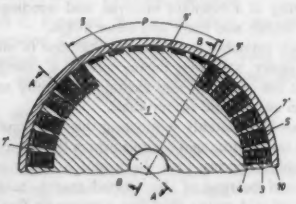
1. In a pole change dynamo-electric machine having a stator core provided with slots receiving coils of three-phase distributed winding adapted for reconnection to form either one of two pole numbers having a ratio of 1:2 and for reconnection for operation on either one of two voltages having a ratio of about 1:2, the improvement wherein said coils of said winding are divided into coil groups of a number equal to three times the greater one of said pole numbers, each of said coil groups consisting of a coil or coils arranged in adjacent positions and having a beginning terminal and an end terminal, every twelve adjacent coil groups forming a set of coil groups, and the coil groups of each set being consecutively numbered in the order of their positions, and the beginning terminal of the second coil group and the end terminal of the eleventh coil group are connected together, the end terminal of the seventh coil group and the beginning terminal of the tenth coil group are connected together, and the beginning terminal of the ninth coil group and the end terminal of the twelfth coil group are connected together.

4,363,986

ROTOR OF AN ELECTRICAL MACHINE

Reinhard Joho, Zürich, and Herbert Pohl, Hausen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 24, 1980, Ser. No. 171,809
Claims priority, application Switzerland, Jul. 26, 1979, 6906/79
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 12 Claims



1. A rotor of an electrical machine, especially a turbine generator, wherein at least one rotor winding is placed into grooves formed in a rotor body and secured against forces developing during operation by means of rings of nonmagnetic material, said rotor having pole zones, comprising:

said rings being secured without overlapping and at a distance from each other on the rotor body with said rings axially and tangentially secured in the pole zones;

said rings having nose-like diametrically opposite projections provided on an inner surface thereof in the pole zone area in at least one ring end zone; and

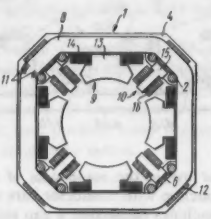
said rotor having corresponding recesses open at least towards one groove in the pole zones whereby one or multi-part breach components slide into at least one of the grooves adjacent to the recesses.

4,363,987

DIRECT CURRENT MACHINE STATOR

Ljudmila A. Vorotyntseva, ulitsa Njutona, 141, kv. 30; Eduard A. Florinsky, ulitsa 12 Aprelya, 6, kv. 13; Leonid I. Semenkov, ulitsa Geroev Truda, 54, kv. 16, and Valentin S. Sysoev, ulitsa Geroev Truda, 37, kv. 60, all of Kharkov, U.S.S.R.

PCT No. PCT/SU80100099, § 371 Date Feb. 4, 1981, § 102(e) Date Feb. 3, 1981, PCT Pub. No. WO80/02777, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 4, 1980, Ser. No. 233,600
Claims priority, application U.S.S.R., Jun. 4, 1979, 2774554
Int. Cl.³ H02K *1/00*
U.S. Cl. 310—216 2 Claims



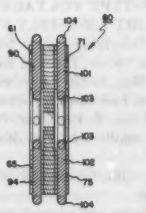
1. A direct current electrical machine stator comprising a support structure having beams disposed around the longitudinal center line of the stator, a magnetic circuit incorporating a yoke adapted to cooperate with support beams, and pole pieces affixed to the yoke, characterized in that the yoke (8) is in the form of a continuous band coiled into a cylindrical spiral with each turn of the spiral embracing by a wider side thereof all the support beams (2) of the support structure (1), the support structure (1) further comprising a pair of frame members (4) positioned at the bases of the cylindrical spiral and having ends of the support beams (2) of the support structure (1) secured thereto.

4,363,988

INDUCTION DISK MOTOR WITH METAL TAPE COMPONENTS

Gerald B. Kliman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 914,443, Jun. 12, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,456
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—268 6 Claims



1. An electrical machine comprising, in combination: a first

ferromagnetic stator body; a ferromagnetic rotor body disposed adjacent said stator body and being rotatable with respect thereto, said rotor body and stator body being separated from one another by an air gap and being magnetically coupled to one another through said air gap;

said stator body comprising a coil of concentric turns of a thin elongated metal tape wound in the form of an annulus with a central opening;

said stator body annulus having first and second end surfaces, and a plurality of symmetrically distributed slots extending axially across at least a portion of the radial thickness of said first end surface and in a direction perpendicular to the layers of said tape and extending into said annulus for a predetermined depth;

first stator winding means wound in said slots;

said rotor body comprising a second coil of concentric layers of metal tape wound in the form of a second annulus, and a second plurality of symmetrically distributed slots, coordinated in number with the number of slots in said stator body, extending across at least a portion of the radial thickness of one end of said second annulus in a direction perpendicular to the layers of said second coil of tape and extending into said second annulus for a predetermined depth, said second coil of tape including a third plurality of slots disposed symmetrically with said second plurality of slots and extending into the opposite end of said rotor annulus, said second and third plurality of slots defining a thin, readily-saturable bridge between each opposed pair of slots thereof; and

squirrel cage type winding means including radial winding sections disposed in said slots of said rotor body.

4,363,989

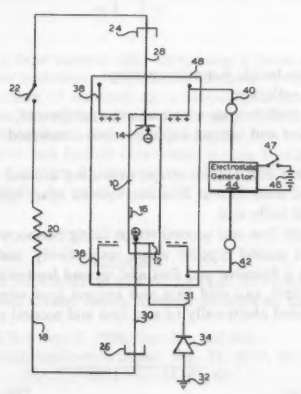
PSEUDO ELECTRODE ASSEMBLY

Lester Johnson, 150-30 71st Ave., Flushing, N.Y. 11367

Continuation-in-part of Ser. No. 873,278, Feb. 17, 1978, abandoned. This application May 5, 1980, Ser. No. 146,673

Int. Cl.³ H02N *3/00*

U.S. Cl. 310—306 **11 Claims**



1. A device for generating an electric current comprising:

a discharge chamber capable of containing an ionizable medium which provides free charges therein;

means capable of ionizing said medium;

accelerating means with said accelerating means being located outside of the discharge chamber to inhibit its neutralization by free charges when therein while being capable of exerting an accelerating field in said chamber to provide kinetic energy to said free charges;

means for collecting free charges when in said chamber including, a first collector capable of collecting negative free charges, and a second collector capable of collecting positive free charges;

each of said collectors adapted to connect to a load circuit to generate electric current therein;

wherein operation of the device causes ionization of the medium which generates free charges in the chamber which are accelerated through the medium to the collectors causing continued ionization thereof and a build up of opposite charges on the respective collectors which is capable of being discharged through a load circuit.

4,363,990

SURFACE ACOUSTIC WAVE TRANSDUCER

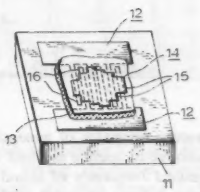
Osamu Yamazaki, Suita; Junichi Inohara, Katano; Kazuo Tazuke, and Kiyotaka Wasa, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 3, 1980, Ser. No. 212,685

Claims priority, application Japan, Dec. 13, 1979, 54-162454

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—313 C **4 Claims**



1. A surface acoustic wave transducer having a piezoelectric thin film, interdigital electrodes disposed on one side surface of said piezoelectric thin film and an apodized counter electrode disposed on the opposite-side surface of said piezoelectric thin film, wherein

said counter electrode has the outline composed of parallel edges parallel to fingers of said interdigital electrode and perpendicular edges perpendicular to said fingers, the parallel edges being positioned in gaps between said fingers, so as not to lie over said fingers of the interdigital electrode.

4,363,991

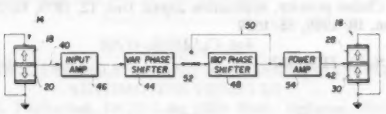
DRAG MODIFICATION PIEZOELECTRIC PANELS

Seymour Edelman, 9115 Glenridge Rd., Silver Spring, Md. 20910

Filed Dec. 24, 1980, Ser. No. 220,092

Int. Cl.³ H04R *17/00*; H01L *41/08*

U.S. Cl. 310—316 **28 Claims**



11. Apparatus for modifying fluid drag on a boundary surface, comprising in combination:

first piezoelectric means for sensing the effect of drag exerted by a fluid on said boundary surface and being operable to generate an electrical signal in accordance with the drag sensed;

electrical circuit means for transforming said electrical signal generated by said first piezoelectric means into an electrical drive signal capable of energizing piezoelectric means; and

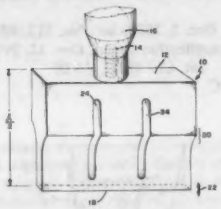
second piezoelectric means coupled to said drive signal and being energized thereby and becoming flexed to cause said boundary surface to move in a predetermined direction relative to said fluid and thereby modify the drag exerted thereby.

4,363,992

RESONATOR EXHIBITING UNIFORM MOTIONAL OUTPUT

Ernest P. Holze, Jr., Brewster, N.Y., assignor to Branson Ultrasonics Corporation, Newtown, Conn.

Filed Jan. 26, 1981, Ser. No. 228,578
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—323 **6 Claims**



1. An ultrasonic resonator of generally rectangular cross-section dimensioned to operate as a half wavelength resonator at a predetermined frequency of sound travelling longitudinally therethrough from an input surface to an oppositely disposed output surface and through a medially disposed nodal region and including a pair of laterally spaced longitudinal slots disposed in said resonator and extending generally from a region near said input surface to a region near said output surface and passing through said nodal region for interrupting Poisson couplings, and including means for applying vibrations of predetermined frequency at a central portion of said input surface, the improvement comprising:

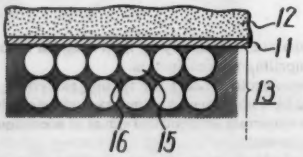
a respective pad disposed at the lateral portions of said input surface for increasing the mass of said resonator at said lateral portions with respect to the central portion of said resonator for achieving substantially uniform motional amplitude along the output surface of the resonator.

4,363,993

PIEZOELECTRIC ELECTRO-MECHANICAL BIMORPH TRANSDUCER

Susumu Nishigaki; Kanji Murano, and Yoshihisa Watanabe, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 213,875
Claims priority, application Japan, Dec. 12, 1979, 54/161198; Jan. 10, 1980, 55/1620
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—332 **6 Claims**



1. An electro-mechanical transducer comprising:

(a) a first layer made of piezoelectric material having opposing major surfaces;

(b) a pair of electrodes formed on said major surfaces, respectively; and

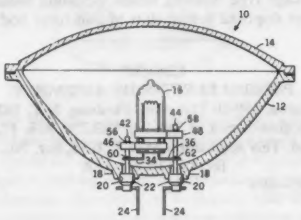
(c) a second layer comprising a plurality of fibers whose surface is clamped to one of said surfaces of said first layer; said first layer having a Young's modulus of E, said second layer having a Young's modulus Ex in one direction x, and a Young's modulus Ey in a direction y perpendicular to said one direction in said major surface, said Young's moduli E, Ex, Ey satisfying the relation $E>Ey$, $Ex>Ey$, and one end of said layers being clamped along one edge so that its opposite edge is free to move and said x and y directions lying in the plane of said second layer and each of said pair of electrodes having thicknesses in the range of 0.1 μm to 3 μm.

4,363,994

HALOGEN LAMP WITH STRAP-TYPE BULB SUPPORT MECHANISM

Salvatore F. Cortorillo, Parsippany, N.J. Nickolas P. Demas, Cranford, N.J. and Russell C. Schwickert, Lake Hiawatha, N.J., assignors to Edison International, Inc., Rolling Meadows, Ill.

Filed Jul. 7, 1980, Ser. No. 166,165
Int. Cl.³ H01J *5/16*; H01K *1/18*
U.S. Cl. 313—113 **8 Claims**



1. An electric lamp comprising:

(a) a reflector;

(b) a bulb having a base at one end thereof;

(c) first and second support wires connected to said reflector;

(d) first and second straps extending around and engaging said bulb base at locations spaced apart longitudinally of said bulb; and

(e) said first and second straps being connected to said first and second support wires, respectively, said bulb including a filament and first and second lead wires connected thereto and said first and second lead wires being connected electrically to said first and second support wires.

4,363,995

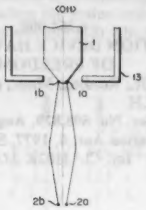
ELECTRON GUN

Tadahiro Takigawa, Inagi; Isao Sasaki, Sodegaura, and Kazuo Tsuji, Numazu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Toshiba Machine Company Limited, Tokyo, both of, Japan

Filed Sep. 23, 1980, Ser. No. 189,908
Claims priority, application Japan, Sep. 26, 1979, 54-123686
Int. Cl.³ H01J *1/14*
U.S. Cl. 313—346 R **6 Claims**

1. An electron gun having a cathode of a lanthanum hexa-

boride (LaB_6) single crystal, in which the axis of the cathode is set to such a crystal orientation that the electron beam has two



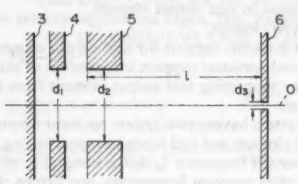
intensive emission regions which are asymmetrical with each other in intensity.

4,363,996

VIDICON TYPE CAMERA TUBE

Masashi Mizushima, Shizuoka; Masanori Maruyama, Kokubunji; Shigeru Ehata, Mobara, and Masakazu Fukushima, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,335
Claims priority, application Japan, Dec. 19, 1979, 54-164058
Int. Cl.³ H01J *29/46, 29/56, 31/38*
U.S. Cl. 313—449 1 Claim



1. A vidicon type camera tube comprising a beam current control section including a thermionic cathode, a first grid having an aperture of diameter d_1, a second grid having an aperture of diameter d_2 and a beam disc having a diaphragm of diameter d_3 disposed at a distance of l along the tube axis from said second grid, and further comprising a main lens section, wherein said diameters d_1, d_2 and d_3 and said distance l are selected to satisfy the relation of $2.48\times10^{-3}<(d_2/l)(d_3/d_1)^2<5.48\times10^{-3}$.

4,363,997

FLUORESCENT LAMP HAVING REFLECTIVE LAYER

Churyo Kodama, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 185,163
Claims priority, application Japan, Sep. 21, 1979, 54/120640
Int. Cl.³ H01J *61/44, 61/48*
U.S. Cl. 313—487 10 Claims

1. A fluorescent lamp of the reflective layer type comprising a glass tube, a first phosphor layer formed on the entire face of the inner wall of said glass tube and a second phosphor layer formed on said first phosphor layer at a certain reflection angle along the axial direction of said glass tube, wherein the average particle size of a phosphor constituting said first phosphor layer is at least 3 μm, the average particle size of a phosphor constituting said second phosphor layer is at least 6 μm and the average particle size of the phophor constituting said first phosphor layer is smaller than the average particle size of the phosphor constituting said second phosphor layer.

4,363,998

FLUORESCENT LAMP PROCESSING WHICH IMPROVES PERFORMANCE OF ZINC SILICATE PHOSPHOR USED THEREIN

Eugene A. Graff, Cedar Grove, and Larry P. Rusch, East Brunswick, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 19, 1981, Ser. No. 265,018
Int. Cl.³ H01J *61/48;* B05D *7/22*
U.S. Cl. 313—487 10 Claims

1. A fluorescent lamp comprising a sealed elongated light-transmitting envelope having electrodes operatively positioned therein proximate the ends thereof and enclosing a discharge-sustaining filling comprising mercury and a small charge of inert ionizable starting gas, a transparent electrically conducting coating substantially comprising tin oxide carried on the interior surface of said envelope, a thin substantially transparent coating principally comprising sub-micron-size aluminum oxide particles carried on said tin oxide coating, and finely divided phosphor means coated over said aluminum oxide, said phosphor means comprising manganese-activated zinc silicate phosphor, said lamp having been fabricated with the improved processing step which comprises:

said aluminum oxide prior to application onto said tin-oxide-coated envelope interior surface is suspended in a liquid vehicle and a predetermined amount of finely divided antimony oxide is included in mixed suspension therewith, said vehicle-suspended oxides are applied over said tin oxide coating and the liquid vehicle then volatilized to leave a residual film of said mixed oxides, said phosphor means are then coated over said film of mixed oxides together with organic binder which must thereafter be burned out by lehring, and during the lehring processing of said coated phosphor means, substantially all of said residual antimony oxide is volatilized to contact said manganese-activated zinc silicate phosphor.

4,363,999

ELECTRIC PROPULSION AND BRAKING SYSTEM FOR AUTOMOTIVE VEHICLES

Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash. 98008

Filed Jul. 14, 1980, Ser. No. 168,172
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—53 35 Claims

1. An electric propulsion and braking system for an automotive vehicle having a plurality of wheels, said system comprising:

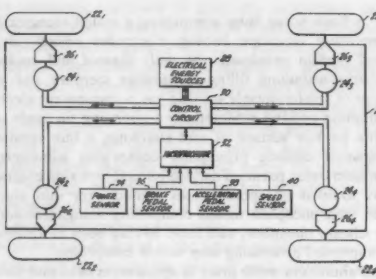
a plurality of main electrical energy sources, each said main electrical energy source being adapted to provide a first dc voltage of a predetermined magnitude across a pair of terminals thereof;

an auxiliary electrical energy source which is adapted to

provide a second dc voltage of a predetermined magnitude across a pair of terminals thereof;

a plurality of high-speed, dc electrical motors, each said motor being associated with one of the plurality of wheels of the vehicle and including: a rotor; a field winding supported on said rotor, said field winding having a pair of terminals; a stator; a multiphase armature winding supported on said stator, said armature winding having a plurality of terminals; and, a commutation circuit connected to said plurality of terminals of said armature winding, said commutation circuit having a pair of terminals and being operative, when enabled, to commutate a third dc voltage applied to said pair of terminals thereof so as to result in the application of potentials to said plurality of terminals of said armature winding which produce a magnetic field that rotates in substantial synchronism with a magnetic field produced by field current in said field winding, and being operative, when disabled, to couple one of said plurality of terminals of said armature winding to one of said pair of terminals of said commutation circuit whenever the potential on said one of said plurality of terminals of said armature winding that results from a voltage induced in said armature winding by the magnetic field of said field winding exceeds the potential on said one of said pair of terminals of said commutation circuit resulting from the third dc voltage applied to said pair of terminals of said commutation circuit;

a plurality of transmission means, each said transmission



means being adapted to mechanically couple one of said rotors to its associated wheel and having a fixed transmission ratio;

first means for varying the third dc voltage applied across the pair of terminals of each said commutation circuit, said first means including: a positive main bus; a negative main bus; means coupled to said pair of terminals of each of said plurality of main electrical energy sources for selectively connecting said main electrical energy sources all in series, all in parallel, or in series/parallel with said positive and negative main busses; means coupled to said pair of terminals of each of said commutation circuits and responsive to a second control signal for selectively connecting said commutation circuits all in series, all in parallel, or in series/parallel with said positive and negative main busses;

second means for varying the field current in each said field winding, said second means including: a positive auxiliary bus coupled to one of said pair of terminals of said auxiliary electrical energy source; a negative auxiliary bus coupled to the other of said pair of terminals of said auxiliary electrical energy source; and, means coupled to said pair of terminals of each of said field windings and responsive to a third control signal for selectively connecting said field windings all in series, all in parallel, or in series/parallel with said positive and negative auxiliary busses; and,

third means for enabling propulsion of the vehicle by enabling each said commutation circuit, for enabling braking of the vehicle by disabling each said commutation circuit, and for varying the amount of propulsion and braking by providing said first and second control signals to said first means and said third control signal to said second means.

4,364,000

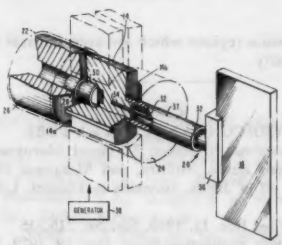
LIMITED ROTATION DEVICE HAVING TWO DEGREES OF FREEDOM

Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Continuation of Ser. No. 608,829, Aug. 29, 1975, abandoned. This application Apr. 6, 1977, Ser. No. 785,019

Int. Cl.³ H02K *33/00*

U.S. Cl. 318—128 **9 Claims**



1. A two degree of freedom, limited rotation system for reciprocally rotating an output element, said system comprising, in addition to said output element,

A. a driven element,

B. a first torsional support for said driven element,

C. a second torsional support independent of said first support for supporting said output element from said driven element,

D. said system having two system resonant frequencies, said output element and said second support having an individual resonant frequency f_a that is unequal to either of said two system resonant frequencies, said driven element and said first support having an individual resonant frequency f_b that is unequal to either of said two system resonant frequencies, and

E. means for driving said driven element at a driving frequency that is substantially equal to the individual resonant frequency f_a of said output element and said second support, whereby said driven element has an essentially zero amplitude of motion while said output element may have a substantial amplitude of motion.

4,364,001

CIRCUIT ARRANGEMENT FOR ENERGY ECONOMY

Alfred Heidt, Schwetzingen; Erich Link, Brühl, and Wolfgang Ortlieb, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Frankl & Kirchner GmbH & Co. KG Fabrik für Elektromotoren u. elektrische Apparate, Schwetzingen, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,548

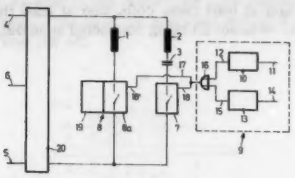
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938625

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—371 **3 Claims**

1. In a circuit arrangement for economizing the use of electrical energy in a drive which includes an induction motor and a clutch-brake unit particularly for sewing machines, in which the windings of the induction motor are such that the motor speed remains virtually constant in a stable speed range under under normal service conditions, and in which the clutch-brake unit serves to control the drive output speed so that the motor operates in an alternation of load phases and no-load phases, the improvement wherein switches (7, 8) are included in the current paths of said windings (1,2) to reduce the current

flow through said windings (1,2) by a predetermined amount, and wherein the arrangement includes modulation circuit means (9) operatively cooperable with said switches (7,8), said modulation circuit means (9) containing a delay element (10) which is triggered when the mains voltage is applied, and an impulse prolongation element (13) which receives a switching



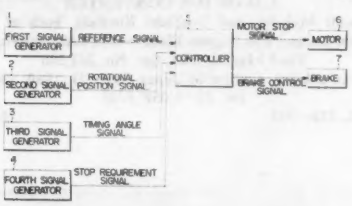
signal when said clutch is engaged, wherein at least one of said switches (7 or 8) comprises a Triac (41) or thyristor (43), and wherein a phase shifter circuit (19) cooperates with at least one of said switches (7 or 8), whereby at least one of said switches (7 or 8) is controlled so as to minimize the current loss in the circuit arrangement via said at least one switch (7 or 8).

4,364,002

CONTROL OF OPERATION OF LOOM

Hajime Suzuki, Anjyo, and Akio Arakawa, Kariya, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 27, 1979, Ser. No. 107,621
Claims priority, application Japan, Dec. 30, 1978, 53-163447
Int. Cl.[3] D03D *51/44;* G05B *19/26*
U.S. Cl. 318—467 18 Claims



1. A method for controlling operation of at least one operating element of a loom on the basis of a reference signal, characterized in that the reference signal is compared with rotational position signal developed during each weaving cycle of the loom to issue a rotational angle signal indicating an angle through which the loom has been rotated with respect to a reference angular position, and that the timing of the operation of the operating element is determined by utilizing the rotational angle signal.

4,364,003

ELECTRONIC GATE CONTROL

Gregory F. Phipps, Santa Cruz, Calif., assignor to Mary A. Baldwin, Mesa, Ariz.; Bernard J. Favaro, Vallejo, Calif. and Sandra Roberts, Glendale, Ariz.

Filed Sep. 16, 1980, Ser. No. 187,710
Int. Cl.[3] G05B *5/00*
U.S. Cl. 318—467 14 Claims

1. A control device for use with a gate having an opening and closing system which includes a reversible electric drive motor, comprising:

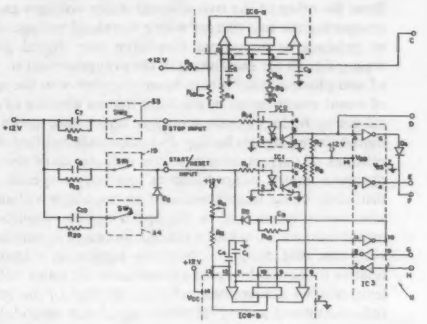
a. detector means for providing a first start pulse, initiating the gate opening cycle;

b. oscillator means for producing repetitive control pulses;

c. control counter means interconnected to said oscillator means for sequential distribution of a predetermined series of opening control pulses in response to said first start pulse, and for sequential distribution of a predetermined series of closing control pulses in response to a second start pulse, for controlling the opening cycle and the closing cycle, respectively;

d. motor direction control means, responsive to a first opening control pulse for interconnecting the motor field in a forward drive mode, and responsive to a first closing control pulse for interconnecting the motor field in a reverse drive mode;

e. reverse control timer means, activated by a second opening control pulse for producing said second start pulse to



initiate, following said opening cycle and a pause cycle, said predetermined series of closing control pulses;

f. motor actuation means responsive both to a third opening control pulse and to a third closing control pulse, for activating the motor during said opening and closing cycles, respectively; and,

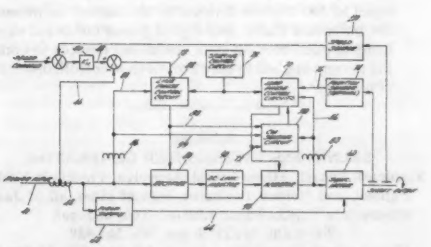
g. limit stop means for sensing a fully open position of the gate and deactivating said motor actuation means for terminating said opening cycle, and for sensing a fully closed position of the gate and deactivating said motor activation means for terminating said closing cycle.

4,364,004

SELF-CONTROLLED POLYPHASE SYNCHRONOUS MOTOR DRIVE SYSTEM

Frank J. Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Jan. 29, 1960, Ser. No. 116,578
Int. Cl.[3] H02P *1/46, 5/36, 7/58*
U.S. Cl. 318—721 15 Claims



1. A self-controlled polyphase synchronous motor drive system for a synchronous motor having a rotor and a polyphase stator, said stator being adapted to have a polyphase voltage applied thereto, said motor drive system comprising

means for producing rotor digital timing signals which are equal in number to two times the number of phases of the polyphase stator and representative of the position of the rotor relative to the stator;

means for producing pulse width modulation control signals wherein the pulse width thereof is responsive to a motor power factor command signal;

a plurality of phase control means equal in number to the number of phases of the polyphase stator and responsive to the pulse width modulation control signals, each of said phase control means having a selected two of the stator voltages applied as an input thereto and including means for producing a modulated analog reference signal from one of the two selected stator voltages and means for summing the amplitude modulated analog reference signal with an unmodulated analog reference signal produced from the other of the two selected stator voltages and for comparing the sum thereof with a threshold voltage signal to produce as an output therefrom two digital gating timing signals for each phase of the polyphase stator, each of said phase control means being responsive to the speed of a said synchronous motor such that an absence of digital gating timing signals occurs at zero motor speed and digital timing signals having distortion induced therein by changes of current acting on the inductance of the synchronous motor is produced at low motor speeds, said distortion being large compared to the stator voltage at low motor speeds and as the speed of the synchronous motor increases, the stator voltage increases in magnitude such that said distortion becomes smaller in magnitude relative to that of the stator voltage until the stator voltage level reaches a magnitude wherein the sum of the amplitude modulated analog reference signal and unmodulated analog reference signal exceeds the threshold level to produce digital timing signals substantially free of distortion;

a digital gating command signal generating means responsive to the digital gating timing signals from each of the phase control means and to the rotor digital timing signals for producing digital gating command signals wherein at zero motor speed and low motor speeds said digital gating command signal generating means is responsive to said rotor digital timing signals to have the leading edge of the digital gating command signals established by the leading edge of a selected one of the rotor digital timing signals until the motor speed reaches a speed wherein digital gating timing signals substantially free of distortion are produced by the phase control means whereupon the leading edge of the digital gating command signals is determined by one of the leading edges of one of the digital gating timing signals from the phase control means and the leading edge of a selected one of the rotor digital timing signals, whichever occurs first in time, and the width of the digital gating command signals is determined by the phase displacement of successive phases which is equal to 360 degrees divided by the number of phases of the polyphase stator, said digital gating command signals being applied to solid state controlled devices to control the current applied to the stator of the controlled synchronous motor.

4,364,005

BRUSHLESS TACHOMETER GENERATOR

Yoshinori Kohzai, Hino; Yoichi Amemiya, Hachioji; Yoshiki Fujioka, and Noboru Iwamatsu, both of Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,428

Claims priority, application Japan, Jul. 19, 1979, 54/99613

Int. Cl.³ H02P *9/00*; H02K *21/12*

U.S. Cl. 322—31 **7 Claims**

1. A tachometer generator comprising:

a generator section comprising:

a stator pole and yoke member having at least three coils fixed thereon;

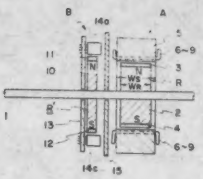
a rotary shaft; and

a rotor mounted on the rotary shaft, said rotor comprising a permanent magnet, the axially extending width of said rotor being less than the axially extending width of said stator pole and yoke member; and

a commutator section comprising:

at least three sensors for detecting the rotational position of the rotary shaft and for emitting first, second and third control signals;

at least three change-over switches operatively connected to said at least three coils, said at least three change-over switches all being connected at an output terminal



for successively transferring, to the output terminal, alternating output voltages supplied by said at least three coils, said at least three change-over switches being controlled by said first, second and third control signals;

a magnetic shield plate interposed between said generator section and said commutator section, whereby

an output voltage, which is proportional to the speed of the rotor, is provided at the output terminal.

4,364,006

REFERENCE VOLTAGE GENERATOR FOR USE IN AN A/D OR D/A CONVERTER

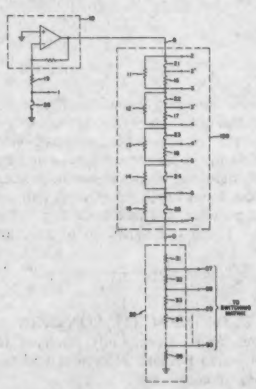
Takayoshi Makabe, and Yoshiaki Kuraishi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1981, Ser. No. 241,503

Claims priority, application Japan, Mar. 21, 1980, 55-36474

Int. Cl.³ G05F *3/08*

U.S. Cl. 323—353 **2 Claims**



1. A reference voltage generator for use in an analog-to-digital or a digital-to-analog converter, said generator comprising:

a power source means for generating a voltage;

a voltage adjusting circuit means connected to the power source means, said voltage adjusting circuit means being composed of N (N being a plural number) polysilicon resistors connected serially and N polysilicon fuses connected in parallel to both ends of each of the N resistors to adjust the output voltage of the power source; and

a resistor network connected to the voltage adjusting circuit and composed of M (M being a plural number) polysilicon

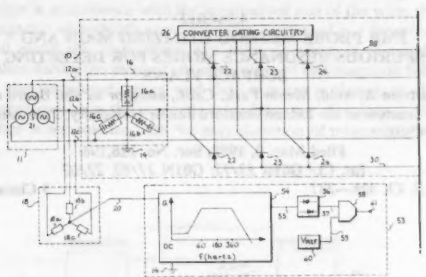
resistors for providing (M-1) reference voltages based on the output voltage of the adjusting circuit, the values of said N resistors of the voltage adjusting circuit being such that the total resistance value of the adjusting circuit becomes $R_0+2^{l-1}\Delta R$ with the l-th (l being equal to or smaller than N) polysilicon fuse of the adjusting circuit cut off, whereby the total resistance value of the adjusting circuit is R_0 with all the polysilicon fuses connected, and the resistance change of the adjusting circuit is ΔR with the first fuse cut off.

4,364,007

UNINTENTIONAL IMPEDANCE DETECTION SYSTEM

John H. Cutler; Willard B. Jarvinen, both of Roanoke, and Loren H. Walker, Salem, all of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 22, 1980, Ser. No. 142,782
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **20 Claims**



1. A system for detecting unintentional impedances between the power conductors and a first node in a network including a power conversion circuit, a plurality of power level lines for connecting said power conversion circuit to an alternating current power source, a static power converter included in said power conversion circuit, and a load supplied by said power conversion circuit, comprising:

(a) a first plurality of impedances equal in number to said power level lines, each being substantially equal in value and having first and second terminals, all of said first terminals being connected to said first node, and each of said second terminals being connected to a respective different one of said power level lines;

(b) a second plurality of impedances, distinct from said first plurality, equal in number to said power level lines, each being substantially equal in value and having first and second terminals, said first terminals being interconnected and defining a second node, and each of said second terminals being connected to a respective different point within said network having a potential which is representative of the potential on a respective different one of said power lines; and

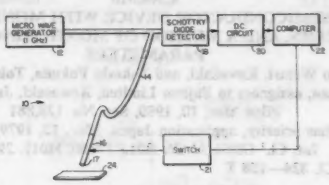
(c) sensing means, responsive to frequencies including that of the source and lower order harmonics thereof, for monitoring the potential difference between said first and second nodes, and effective for providing a system output signal in reaction to said unintentional impedance when said potential difference exceeds a preselected value.

4,364,008

FOCUSING PROBE FOR MOISTURE MEASUREMENT DEVICE

Steven L. Jacques, 1918 Woolsey St., Berkeley, Calif. 94704

Filed Oct. 2, 1980, Ser. No. 193,329
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 R **15 Claims**



1. An apparatus for measuring the moisture content of a target, at a particular depth in said target, wherein said apparatus comprises:

means for generating an electromagnetic wave of a microwave frequency,

means for guiding said wave;

means for detecting said wave; and

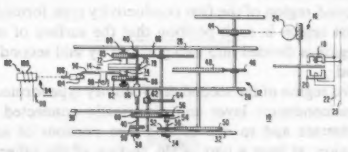
means for focusing said wave onto said depth in said target.

4,364,009

CLUTCH MECHANISM FOR TIME OF DAY WATTHOUR METER REGISTERS

Kenneth G. Halstead, Raleigh, and Eugene C. Benbow, Wake, both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 14, 1980, Ser. No. 167,952
Int. Cl.³ G01R *15/08, 19/16*
U.S. Cl. 324—116 **6 Claims**



1. A meter dial register for indicating both continuous and periodic accumulated values of a measured quantity, said meter dial register comprising:

a rotatable measuring element for rotating at a rate corresponding to the consumption of the measured quantity;

first and second gear trains both continuously coupled to the rotations of said measuring element;

a first dial pointer coupled in continuously driven relationship with said first gear train for indicating the continuous accumulated values of the measured quantity;

a friction clutch driving part being coupled in continuously driven relationship with said second gear train and being freely rotatable at a restrained axial position about a predetermined axis of rotation;

a friction clutch driven and brake part being rotatable about said predetermined axis of rotation and further being axially shiftable between an open position spaced from said friction clutch driving part and a closed position engaging said friction clutch driving part for effecting common rotation therewith;

clutch operating means for shifting said friction clutch driven and brake part between said open and said closed positions and further for arresting said friction clutch driven and brake part when shifted by said operating means to said open position;

a third gear train continuously coupled in driven relationship with said friction clutch driven and brake part; and

a second dial pointer coupled in continuously driven relationship with said third gear train for indicating the periodically accumulated values of the measured quantity.

4,364,010

SEMICONDUCTOR DEVICE WITH MONITOR PATTERN, AND A METHOD OF MONITORING DEVICE PARAMETERS

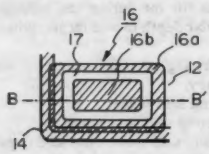
Kiyoto Watari, Kawasaki, and Takeshi Fukuda, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 10, 1980, Ser. No. 128,881

Claims priority, application Japan, Mar. 12, 1979, 54-28558

Int. Cl.³ G01R *31/26;* B01J *17/00;* H01L *29/72*

U.S. Cl. 324—158 T **18 Claims**



1. A semiconductor device comprising a chip having at least one semiconductor circuit element formed thereon in a first area of the chip and a monitor pattern formed simultaneously with said circuit element in a predetermined, second area of the chip, said semiconductor device comprising:

a substrate and a semiconductor layer of a first conductivity type formed on said substrate; and

said monitor pattern comprising:

a first region of a second conductivity type formed in said semiconductor layer;

a second region of the first conductivity type formed in said first region in such position that the surface of said first region is divided into two portions by said second region; and

a third region of the second conductivity type formed in said semiconductor layer and electrically connected to said substrate and to one of said two portions of said first region, at least a part of the surface of the other of said first region being exposed to enable electrical contact thereto.

4,364,011

MECHANICAL ASSEMBLIES EMPLOYING SENSING MEANS FOR SENSING MOTION OR POSITION

Edward J. Bloomfield, South Woodchester, and Brian Snelgrove, Brockworth, both of England, assignors to Ransome Hoffmann Pollard Ltd., Chelmsford, England

Filed May 16, 1980, Ser. No. 150,446

Claims priority, application United Kingdom, May 16, 1979, 7916950

Int. Cl.³ G01P *3/48*

U.S. Cl. 324—174 **15 Claims**

1. A compact bearing assembly, comprising:

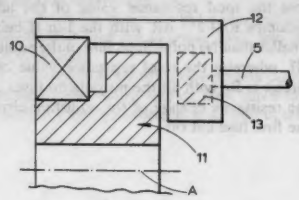
an inner bearing race;

an outer bearing race;

one of said inner and outer bearing races being rotatable about an axis while the other one of said inner and outer bearing races is stationary;

means incorporated within said one of said inner and outer bearing races, as an integral part thereof, for producing a signal means; and

means incorporated within said other one of said inner and outer bearing races, as an integral part thereof, for sensing said signal means, and therefore the movement of, said one



of said inner and outer bearing races relative to said other one of said inner and outer bearing races.

4,364,012

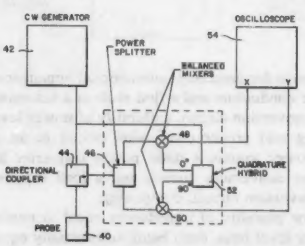
FMR PROBE METHOD UTILIZING MAIN AND SPURIOUS RESONANCE MODES FOR DETECTING SURFACE FLAWS

Bertram A. Auld, Menlo Park, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Mar. 3, 1980, Ser. No. 126,196

Int. Cl.³ G01R *33/12;* G01N *27/82, 22/02*

U.S. Cl. 324—237 **3 Claims**



1. The method of detecting and distinguishing flaws in a metal surface detected by means of a ferromagnetic resonance probe from signals generated due to probe lift-off from the metal surface comprising the steps of:

placing a ferromagnetic resonator adjacent to the surface, said resonator having a plurality of resonance modes,

applying a dc magnetic field to said resonator,

applying an rf magnetic field to said resonator,

field coupling said probe and said surface with a main resonance mode and simultaneously at least one spurious mode of resonance,

scanning said probe across said surface during said field coupling, and

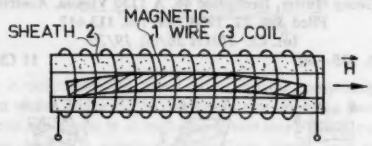
detecting during said scanning real and imaginary changes in impedance of said probe at a fixed frequency whereby probe impedance variation due to a flaw is generally orthogonal to probe impedance variation due to probe lift-off from said surface.

4,364,013

MAGNETIC TRANSDUCER COMPRISING A STRAINED MAGNETIC WIRE IN A RIGID SHEATH OF NON-MAGNETIC MATERIAL

Jean P. Castera, and Jean M. Dupont, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 13, 1980, Ser. No. 149,317
Claims priority, application France, May 16, 1979, 79 12459
Int. Cl.³ G01R 33/00; G01N 27/72; G01B 7/14
U.S. Cl. 324—260 7 Claims



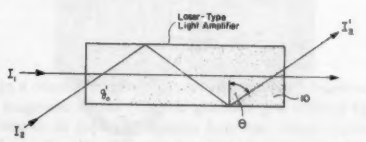
1. A magnetic transducer using a strained magnetic material responsive to a magnetic field parallel to the longitudinal axis of said transducer, said transducer comprising a magnetic wire introduced into a rigid sheath of nonmagnetic material, the respective shapes of the wire and sheath being such that wire in its sheath is kept bent, thus creating longitudinal strains so as to produce in one area of the wire an easy direction of magnetization in accordance with the longitudinal axis of the wire, the magnetic wire-sheath assembly being positioned in a detection coil along the longitudinal axis thereof, which is to supply pulses during the momentary application of said magnetic field to the transducer, when said field induces a change to the magnetization in the magnetic wire from one direction to the other in accordance with the easy direction of magnetization.

4,364,014

OPTICAL MODULATOR

Richard W. Gray, Box 5210, Santa Monica, Calif. 90405

Filed Mar. 30, 1978, Ser. No. 891,542
Int. Cl.³ H01S 3/10
U.S. Cl. 330—4.3 8 Claims



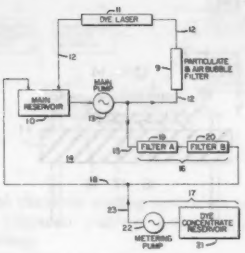
1. An optical modulator comprising: a member including an optical gain-saturable medium capable of amplifying optical signals; means introducing a first optical signal into the member for passage through the medium and to be amplified by the medium; and means introducing a second optical signal into the member for passage through the medium to be amplified by the medium with a gain greater than the gain of said first signal, the first and second signals being intercoupled by cross-saturation of the medium such that variations in the intensity of the first optical signal changes the gain in the medium by cross-saturation and thereby produces greater variations in the intensity of the second signal as the first signal passes through the medium.

4,364,015

COMPACT RESERVOIR SYSTEM FOR DYE LASERS

J. Michael Drake, Richland, Wash., and Horace W. Furumoto, Wellesley, Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Mar. 12, 1981, Ser. No. 243,200
Int. Cl.³ H01S 3/05
U.S. Cl. 372—53 13 Claims



1. In a reservoir system for liquid dye lasers of the type comprising a dye solution reservoir and main fluid circuit means for circulating dye solution between the reservoir and a dye laser, the improvement comprising:

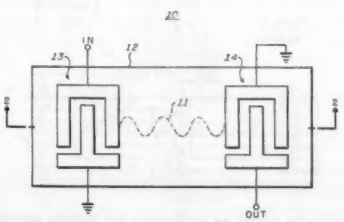
a by-pass loop circuit coupled to said main fluid circuit means for diverting therefrom a portion of said solution, said by-pass circuit including filtering means for filtering substantially all solute and particles from said portion of the solution, means for replenishing dye to said portion of the solution, and means for returning said replenished dye solution to said main circuit.

4,364,016

METHOD FOR POST FABRICATION FREQUENCY TRIMMING OF SURFACE ACOUSTIC WAVE DEVICES

William J. Tanski, Maynard, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,951
Int. Cl.³ H03H 3/08, 9/25, 9/42, 9/64
U.S. Cl. 333—193 2 Claims



1. A method for increasing the resonant frequency of surface acoustic wave devices of the type having a substrate fabricated from a first material about which structures fabricated from a second material are disposed, said method comprising heating said SAW device at a temperature in excess of 250° C. for a predetermined period of time.

4,364,017

ELASTIC SURFACE WAVE DEVICE

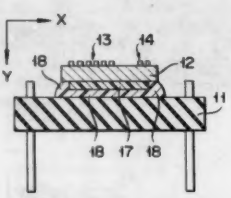
Shizuo Tokunaga; Takushi Yamada, both of Hyogo; Kazuhisa Yabukawa, Himeji; Shigeyuki Kita, Hyogo, and Tomoyoshi Yase, Tatsuno, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 16, 1980, Ser. No. 217,147

Claims priority, application Japan, Dec. 20, 1979, 54-164752

Int. Cl.[3] H03H *9/64, 9/68, 9/09, 9/25*

U.S. Cl. 333—194 9 Claims



1. An elastic surface wave device comprising:
a piezoelectric substrate having first and second surfaces;
an input electrode and an output electrode on the first surface;
the input and output electrodes being in comb shape and opposing each other;
a sound absorbing resin layer formed on at least part of the second surface of said piezoelectric substrate; and
an adhesive resin layer in contact with said sound absorbing resin layer and said piezoelectric substrate for adhering said piezoelectric substrate to a stem;
the sound absorbing resin layer and the adhesive resin layer being shaped and positioned so as to form at least three layers and two layer interfaces in a direction of propagation of a surface wave of said piezoelectric substrate and at least two layers and one layer interface in a direction from the first surface to the second surface of said piezoelectric substrate.

4,364,018

COMPACT MINIRELAY

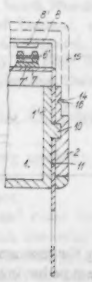
Wolfgang Dammert, Ludwigstrasse 32, D-8672 Selb, and Horst Enge, Hauptstrasse 18, D-8671 Schonwald, both of Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,767

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830074; Jul. 18, 1978, 2831432; Jul. 18, 1978, 2831438; Jul. 21, 1978, 2840998

Int. Cl.[3] H01H *9/02*

U.S. Cl. 335—202 6 Claims



1. In a compact minirelay having a box-shaped housing having side walls having upper edges bounding an open top and end walls within which are located an exciter coil, a yoke, an armature, a switch and contact springs, and a hooded lid closing the open top of said housing, the improvement comprising:
lead conductors extending from said switch contact springs and exciter coil therefrom along the outside of said side walls and plate-like parts overlying and immobilizing said lead conductors against said side walls.

4,364,019

MULTIPART ACTUATING MECHANISM

Hans-Georg Hütter, Beckgasse 46, A 1130 Vienna, Austria

Filed Jan. 21, 1980, Ser. No. 113,447

Int. Cl.[3] H01H *36/00, 19/20*

U.S. Cl. 335—207 11 Claims

1. An electrical switch comprising a deformable housing:
and in said housing a plurality of electrically conductive contacts adapted for insertion in an electrical circuit;
enclosing a first and a second actuating elements which are movable relative to each other for connecting and disconnecting said contacts to close or break said circuit;
each of said actuating element comprising permanent magnetic poles, at least one of the poles of said first element being movable from a position wherein it is attracted by at least one of the poles of said second element to a position where it is repelled by at least one of the poles of said second element, and
wherein said actuating elements being movable from one of said positions to the other position by changing the shape of said housing.

4,364,020

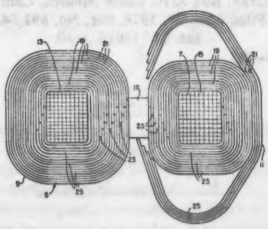
AMORPHOUS METAL CORE LAMINATIONS

Kou C. Lin, Hermitage, and Belvin B. Ellis, Sharon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 6, 1981, Ser. No. 232,274

Int. Cl.[3] H01F *27/24*

U.S. Cl. 336—212 3 Claims

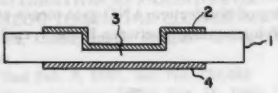


1. A magnetic core for use with electrical coils comprising:
a plurality of groups of butt-jointed laminations of an amorphous alloy having high permeability and brittleness as annealed,
each group of laminations comprising an external layer of protective material having a melting point above the temperature range of from about 340° C. to about 420° C. and having high permeability in the direction of grain orientation, whereby each lamination group is protected from damage during handling, and
the assembly of the laminations of amorphous metal an external layer being in surface-to-surface contact and devoid of interlaminar compounds.

4,364,021
LOW VOLTAGE VARISTOR CONFIGURATION

Lionel M. Levinson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 7, 1977, Ser. No. 840,262
Int. Cl.³ H03K 17/30
U.S. Cl. 338—20 6 Claims

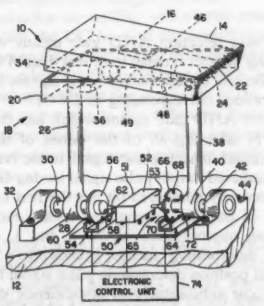


1. A polycrystalline metal oxide varistor comprising a sintered wafer, said wafer having two major opposing faces, with at least one recess in at least one of said major faces, each said recess having a substantially uniform depth, said recessed wafer having a single conductive coating of electrode material on each major face thereof, said coating electrically connecting the bottoms of each recess present on its corresponding face, whereby the breakdown voltage is lowered but mechanical strength remains substantially unaltered.

4,364,022
MAGNETIC CONTROL PEDAL APPARATUS

Grant C. Melocik, Chardon, and Wayne T. Wiblin, Saybrook, both of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US81/01233, § 371 Date Sep. 11, 1981, § 102(e) Date Sep. 11, 1981
PCT Filed Sep. 11, 1981, Ser. No. 309,342
Int. Cl.³ H01L 43/04
U.S. Cl. 338—32 H 9 Claims



1. In a control pedal apparatus (10) having a frame member (12), magnetic means (52) for generating a control signal in response to an applied magnetic field and being connected to said frame member (12), and a pedal (14) having a magnet (16) and being movable between a first position at which a magnetic pathway is opened and a second position at which said magnetic pathway is closed, the improvement comprising:

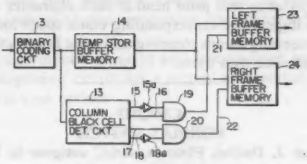
a movable pedal support (18) of magnetically permeable material mounted to said frame member (12) and movable between a plurality of positions, said movable pedal support being constructed to conduct the magnetic field between said magnet (16) and said magnetic means (52) in response to said pedal (14) being at said second position; and

means (64) for generating data corresponding to said plurality of positions of said movable pedal support (18).

4,364,023
OPTICAL CHARACTER READING SYSTEM

Isao Isshiki; Koji Sato; Katsuyoshi Sunago; Akihiro Ohoka, and Masayuki Akatsuka, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 5, 1980, Ser. No. 156,517
Int. Cl.³ G06K 9/00
U.S. Cl. 340—146.3 H 8 Claims



1. An optical character reading system for reading characters having a character width in a scanning direction, said system comprising:

a sensor comprising a two-dimensional array of photoelectric conversion elements covering an area having a scanning width in said scanning direction, said sensor generating output signals;

a left frame detecting circuit comprising a left frame buffer memory for detecting and storing a left two-dimensional pattern of said output signals which occurs when the left side of a character is at the left end of the area covered by said sensor;

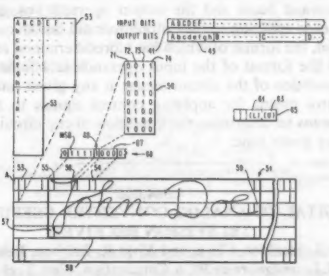
a right frame detecting circuit comprising a right frame buffer memory for detecting and storing a right two-dimensional pattern of said output signals which occurs when the right side of said character is at the right end of said area covered by said sensor; and

means for combining said left and right two-dimensional patterns to recognize said character.

4,364,024
SIGNATURE PRESENTATION METHOD AND APPARATUS

Karl Paetsch, Roesrath, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,291
Int. Cl.³ B41J 3/00; H04N 1/00
U.S. Cl. 340—146.3 SY 3 Claims



1. A matrix printer for presenting an image of a signature, the improvement comprising:

means for receiving and storing a count indicative of the number of lines of character spaces having a portion of said image and a count of the number of character spaces in said lines;

means for contiguously receiving and storing a plurality of blank space indicator bits including a binary bit for each

character space of a line of character spaces having a portion of said image;

logic means responsive to said stored counts for examining each blank space indicator bit in sequence;

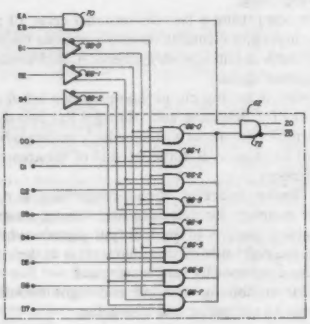
stepping means controlled by said logic means to cause the print head of said printer to skip each character space position having a logical zero corresponding blank space indicator bit;

data gates controlled by said logic means for gating slice data bytes to said print head at each character space having a logical one corresponding blank space indicator bit, said stepping means stepping said print head between each of said slice data bytes.

4,364,025
FORMAT SWITCH

Christopher J. Dalton, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 2, 1979, Ser. No. 329
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **15 Claims**



1. In combination:

an A input operand bus adapted to carry binary signals of an A operand of n bits, where n is an integer other than zero;

a B input operand bus adapted to carry the binary signals of a B operand of n bits;

an output operand bus adapted to carry binary signals on an output operand of n bits, said A, B and output operands each having a format;

circuit means having p conditions, where p is an integer other than zero, said circuit means connected to the input operand buses and the output operand bus, said circuit means applying to the output operand bus an output operand, the format of which has a predetermined relationship to the format of the input operands as a function of the condition of the circuit means at any given time; and

control means for applying control signals to the circuit means to determine the condition of the circuit means at any given time.

4,364,026
DIGITAL-TO-ANALOG CONVERTER USEFUL IN A TELEVISION RECEIVER

Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

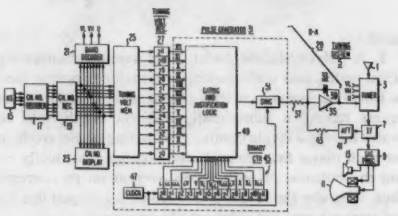
Filed Nov. 30, 1979, Ser. No. 98,925
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **6 Claims**

1. In a system including register means for storing a plurality of N bits representing in combination the magnitude of an analog signal, each of said bits having a respective identifying number n between N and 1 and representing a respective power of 2 equal to 2^{n-1}, each of said bits having either a first or a second level indicating the presence or absence, respectively, of said bit in the combination representing said magnitude, apparatus for converting the contents of said register means to a pulse signal having, in general, G pulses representing the magnitude of said analog signal, comprising:

clock means for generating clock pulses;

counter means for generating a plurality of binary pulse signals in response to said clock pulses, each of said binary pulse signals having pulses with durations proportional to a respective power of 2;

a plurality of N selection AND gate means each having an identifying number n between N and 1, each of said selec-



tion means being responsive to a respectively numbered bit and a respective predetermined one of said binary pulse signals for selecting pulses from the respective predetermined binary pulse signal to derive a respectively numbered output pulse signal when said respectively numbered bit has said first level;

each of said selection AND gate means which has an identifying number n between N and M+1, where M is a positive integer greater than zero and 2^M is equal to G, being responsive to the one of said binary pulse signals having pulses with durations corresponding to

$$\frac{2^{n-1}}{G};$$

each of said selection AND gate means which has an identifying number n equal to or less than M being responsive to the one of said binary pulse signals having pulses with durations corresponding to 2^{N-n};

said selection AND gate means which has the identifying number N selecting all of the pulses of the respective predetermined binary pulse signal to derive the respectively numbered output pulse signal having G pulses when the respectively numbered bit has the first level;

a plurality of position determining means each having an identifying number between N−1 and 1, each of said position determining means generating a respectively numbered position determining pulse signal having pulses which occur substantially in coincidence with the time intervals not occupied by pulses of all the preceding higher numbered output pulse signals;

each of said selection AND gate means which has an identifying number between N−1 and 1 also being responsive to the respectively numbered position determining pulse signal for selecting those of the pulses of the respective predetermined binary pulse signal which are substantially coincident with the pulses of the respectively numbered position determining pulse signal to derive the respectively numbered output pulse signal when the respectively numbered bit has the first level so that each of said output pulse signals which has an identifying number between N−1 and M+1 having G pulses which are contiguous but not coincident with the respective G pulses of all the preceding higher numbered output pulse signals and each of said output pulse signals which has an identifying number equal to or less than M having less than G pulses which are distributed among and contiguous with differ-

ent ones of the G pulses of the output pulse signals which have identifying numbers between N and M+1; and

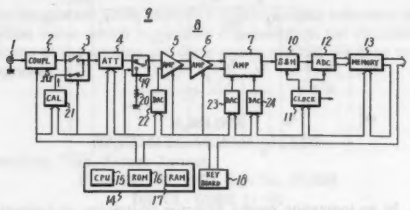
OR gate means for additively combining the pulses of said output pulse signals to generate said pulse signal representing the magnitude of the analog signal.

4,364,027

CALIBRATION APPARATUS FOR ANALOG-TO-DIGITAL CONVERTER

Rikichi Murooka, Chiba, Japan, assignor to Sony/Tektronix, Tokyo, Japan

Filed Feb. 9, 1981, Ser. No. 232,481
Claims priority, application Japan, Sep. 16, 1980, 55-128181
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **14 Claims**



1. A calibration apparatus for an analog-to-digital converter, comprising:

circuit means for controlling the DC level and the amplitude of an input signal applied thereto, the output signal from said circuit means being applied to said analog-to-digital converter;

reference signal generator means for generating first, second and third reference levels to be applied to said circuit means, said first reference level being intermediate said second and third reference levels; and

control means for controlling said circuit means in such a manner that the DC level of the output signal thereof is responsive to a digitized output from said analog-to-digital converter when the first reference level is applied to said circuit means, and that the amplitude of the output signal thereof is responsive to the difference between digitized outputs from said analog-to-digital converter when the second and third reference levels are applied to said circuit means.

4,364,028

INTEGRATING ANALOG TO DIGITAL CONVERTER HAVING OFFSET ERROR COMPENSATION

Eiji Masuda, Kawasaki, and Yasoji Suzuki, Kanagawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 51,215, Jun. 22, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,373
Claims priority, application Japan, Jun. 30, 1978, 53-79498
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 NT **10 Claims**

1. A method of converting an analog signal into a digital signal comprising the steps of:

providing an integrating circuit having first and second input terminals adapted to receive voltage signals, said integrating circuit for integrating the difference in voltage level between the voltage signals provided to said first and second input terminals to produce an integrating output signal including a voltage offset component;

supplying a first reference voltage level at a first reference voltage terminal;

supplying a second reference voltage level at a second reference voltage terminal;

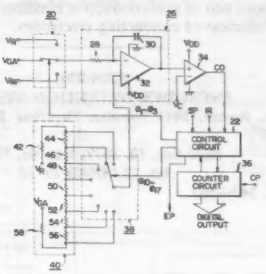
supplying an analog input voltage to be represented as a digital signal at an analog input terminal;

supplying a plurality of intermediate voltage levels between said first and second reference voltage levels;

selecting and applying one of said plurality of intermediate voltage levels to said first input terminal to compensate said integrating circuit for said voltage offset component of said integrating output signal;

applying said first reference voltage level to said second input terminal of said integrating circuit for a first time period;

applying said input voltage to said second input terminal of said integrating circuit for a second time period equal to said first time period;



applying said second reference voltage level to said second input terminal of said integrating circuit for a time period terminated when said integrating output signal is equal to a predetermined voltage level;

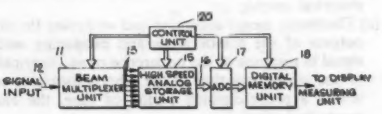
determining a third time period equal in duration to the period that said second reference voltage level was applied to said second input terminal of said integrating circuits; and generating a digital signal proportional to said second reference voltage level, said proportion comprising a ratio of said third time period of said first time period, said digital signal comprising said digital representation of said analog input signal.

4,364,029

FAST TRANSIENT DIGITIZER

Francesco Villa, Palo Alto, Calif., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 8, 1981, Ser. No. 281,453
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SH **11 Claims**



5. A system for processing a high frequency analog electrical signal for subsequent analysis, said system comprising:

means for generating a plurality of discrete analog signal samples corresponding to said high frequency analog electrical signal, said generating means including means for generating a scanning beam of electromagnetic radiation, a control element having a terminal adapted to be coupled to said analog electrical signal for modulating the intensity of said scanning beam in accordance with amplitude variations of said analog signals, and a plurality of target elements sequentially arranged along a scanning

path of said beam for receiving successive intensity modulated portions of said scanning beam;

a plurality of high speed analog storage devices coupled to different ones of said plurality of target elements for storing discrete analog signal samples received by associated target elements during successive scans thereof;

means coupled to said analog storage devices for converting said discrete analog signal samples to equivalent digital signal samples; and

means coupled to said converting means for storing said digital signal samples;

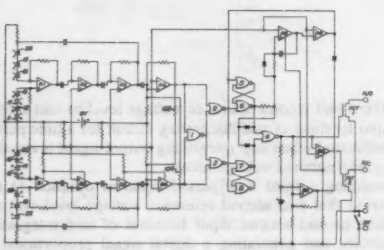
wherein each of said plurality of target elements comprises a semiconductive element for generating an amplified signal representative of the amplitude of said high frequency analog signal during scanning thereof; and

wherein each of said plurality of target elements comprises a spaced pair of semiconductive elements having a plurality of interleaved conducting electrodes.

4,364,030
INTRUDER DETECTION SYSTEM

John A. Rossin, 1411 Norman Firestone Rd., Goleta, Calif. 93017

Filed Sep. 10, 1979, Ser. No. 73,869
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—567 **11 Claims**



1. An improved detection system for optically monitoring an area an producing an alarm signal only in response to motion of an intruder across the monitoring area, including:

(a) A sensor optically responsive to infrared radiation of an intruder, the sensor having at least a pair of discrete sensor areas each producing an electrical output in response to infrared radiation;

(b) Means optically directing infrared radiation from only the monitored area onto the discrete sensor areas of the sensor, radiation from only a portion of the monitored area being directed onto each sensor area, whereby movement of an intruder across the monitored area causes one then the other of the sensor areas of the pair to produce an electrical output;

(c) Electronic means accepting and analyzing the electrical outputs of the sensor areas and producing said alarm signal in response to the occurence of an electrical output of one sensor area then of the other sensor area of a pair within a predetermined period of time, the electronic means including

(i) at least two separate electronic channels responding respectively to the electrical output of the discrete sensor areas of the pair, the channels each being responsive to the presence of the electrical output of a discrete sensor area to produce an output in response to said electrical output above a given threshold level,

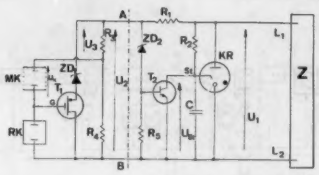
(ii) means automatically adjusting the sensitivity of at least one channel in response to the output of the other channel to cause said one channel to produce an output in response to an input above a threshold level lower than said given threshold level, and

(iii) means analyzing the outputs of the electronic channels and producing an alarm signal in response to the occurrence of said channel outputs within a predetermined period of time.

4,364,031
IONIZATION SMOKE DETECTOR WITH INCREASED OPERATIONAL RELIABILITY

Andreas Scheidweiler, Uerikon, and Peter Müller, Oetwil am See, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Oct. 20, 1980, Ser. No. 198,807
Claims priority, application Switzerland, Dec. 14, 1979, 11077/79
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 **6 Claims**



1. In an ionization smoke detector containing an ionization chamber operated at an extra low voltage, said ionization chamber having a sensor composed of a measuring electrode and a counter electrode, the ambient air being accessible to the ionization chamber, the ionization chamber containing at least one radioactive source for generating ions, an electrical circuit for triggering an alarm, the smoke detector being connected by means of lines with a central signal station which delivers to the lines a detector operating voltage, the improvement which comprises:

converter means provided for said smoke detector;

said converter means reducing the detector operating voltage to the operating voltage of the sensor such that such sensor operating voltage is at least five times smaller than the detector operating voltage;

a first circuit element which is at the sensor operating voltage and controlled by a voltage drop appearing across the ionization chamber;

said first circuit element upon exceeding a predetermined smoke density becoming conductive and reducing the sensor operating voltage;

a second circuit element which is at the detector operating voltage and controlled by the sensor operating voltage; and

said second circuit element, when the sensor operating voltage falls below a predetermined value becoming conductive and triggering an alarm signal.

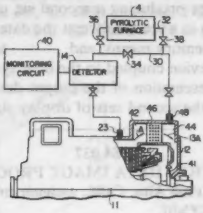
4,364,032
METHOD AND APPARATUS FOR DIAGNOSING LOCAL OVERHEATING IN A ROTARY ELECTRIC MACHINE

Kiyoshi Narato, Ibaraki; Keizou Ohtsuka, and Sadahiko Niwa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,094
Claims priority, application Japan, Dec. 8, 1979, 54-158730
Int. Cl.³ G08B *17/12*
U.S. Cl. 340—679 **6 Claims**

1. A method for diagnosing a local overheating state occurring in a gas cooled rotary electric machine using an insulating coating material which is subjected to thermal-decomposition when the coating material is exposed to high temperatures thereby generating submicron particles, said method comprising the steps of detecting the concentration in the cooling gas of submicron particles generated through thermal-decomposi-

tion of said insulating coating material, integrating a signal representing the concentration of said submicron particles with respect to time, and producing an alarm signal when said



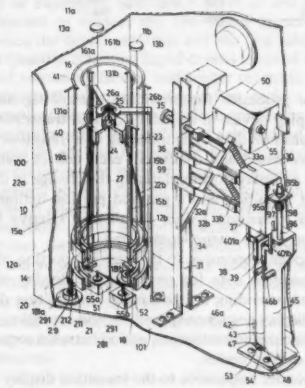
time-integration value exceeds a predetermined reference integration value which is variable depending on the circulating volume of the cooling gas for a rotary electric machine to be diagnosed.

4,364,033

ALARMING SEISMOMETER

Yun-Tyng Tsay, Taipei, Taiwan

Filed Oct. 31, 1979, Ser. No. 89,988
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—690 **9 Claims**



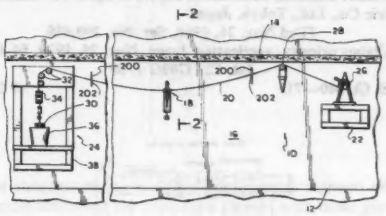
1. An alarming seismometer apparatus comprising:
(a) a case having a plurality of supporting members therein, one of said supporting members being provided with a cylinder;
(b) a first seismometer for detecting left-right ground motions secured by certain ones of said supporting members, said first seismometer including a plurality of annular pendulums connected interlockingly;
(c) a steel ball contained within said cylinder;
(d) said cylinder being connected with at least one pendulum of said plurality of pendulums;
(e) a universal joint means connected to a second of said supporting members and located above said steel ball;
(f) a detecting needle actuated by motions of said pendulums, the upper end of said detecting needle being inserted through said steel ball into a recess in said universal joint whereby a higher magnification of the motions of said detecting needle may be obtained if said pendulums are moved in an earthquake;
(g) an electromagnetic means for producing a voltage by the motion of said detecting needle;
(h) rectifying circuit connected with said electromagnetic means whereby motions of said detecting needle can be magnified interlockingly by said pendulums, in even a very brief earthquake;
(i) a second seismometer, for detecting up and down ground motions, secured by a third of said support members;
(j) an alarm system connected with said rectifying circuit; and
(k) a means for adjusting the sensitivity of said alarm system.

4,364,034

MONITORING SYSTEM FOR MOVEMENT OF TUNNELS AND OTHER STRUCTURES

Thomas A. Bellatty, 139 Smull Ave., West Caldwell, N.J. 07006; Joseph S. Zadik, 944 52nd St., Brooklyn, N.Y. 11219, and Richard Mast, 97 Steele Ave., Staten Island, N.Y. 10306

Filed Dec. 19, 1980, Ser. No. 218,458
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—690 **33 Claims**



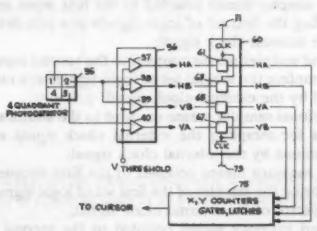
1. A wire system for monitoring movements of tunnels and other structures comprising a thin elongated wire with known properties of thermal expansion, means for supporting said wire between at least two fixed points in a tunnel, means for applying a constant tension to said wire to secure it in a stable configuration and means for monitoring movement of a measuring plate fixed to the tunnel at a monitoring point and having an aperture formed therein through which said wire extends and a pair of mutually perpendicular cursor means movably mounted on said plate relative to said wire for providing an indication of the position of said wire in said aperture.

4,364,035

ELECTRO-OPTICAL MOUSE

Steven T. Kirsch, 655 S. Fairoaks Ave., #D313, Sunnyvale, Calif. 94086

Continuation-in-part of Ser. No. 264,478, May 18, 1981. This application Jun. 15, 1981, Ser. No. 273,641
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—710 **10 Claims**



1. A position control system for a cursor or the like comprising,
a surface having a pattern of passive, position-related lines thereon, with a first group of lines characterized by reflection of one color and absorption of a second color and a second group of lines characterized by reflection of the second color and absorption of the first color,

a detector means, movable over the surface, having a light source directed at the surface, alternately emitting light of said first and second colors, upon receipt of clock pulses, and a light detector positioned for receiving light reflected from the surface and producing electrical output signals representing reflection from lines in said first and second groups of lines,

clock means connected to said source and detector for generating clock pulses timing said light source and synchronizing the detector output signals to the source, and

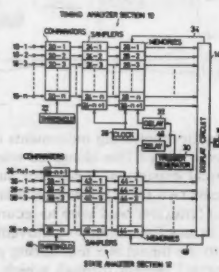
counter means connected to receive said electrical signals for counting said lines during detector motion over the surface, thereby deriving a position signal for a cursor or the like.

4,364,036

COMPOSITE LOGIC ANALYZER CAPABLE OF DATA DISPLAY IN TWO TIME-RELATED FORMATS

Kazunari Shimizu, Musashino, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,488
Claims priority, application Japan, Nov. 26, 1979, 54-152600
Int. Cl.³ G09G *1/08*
U.S. Cl. 340—715 **9 Claims**



1. A composite logic analyzer capable of displaying a first and a second set of data in different, time-related formats, comprising:

(a) first input means for receiving a first set of logic signals;

(b) second input means for receiving a second set of logic signals;

(c) additional input means for receiving an external clock signal associated with the second set of logic signals;

(d) an internal clock for generating an internal clock signal having a repetition frequency higher than that of the external clock signal;

(e) first sampler means coupled to the first input means for sampling the first set of logic signals at a rate determined by the internal clock signal;

(f) second sampler means coupled to the second input means for sampling the second set of logic signals at a rate determined by the external clock signal;

(g) additional sampler means coupled to the additional input means for sampling the external clock signal at a rate determined by the internal clock signal;

(h) first memory means coupled to the first sampler means for storing the samples of the first set of logic signals under the control of the internal clock signal;

(i) second memory means coupled to the second sampler means for storing the samples of the second set of logic signals under the control of the external clock signal;

(j) additional memory means coupled to the additional sampler means for storing the samples of the external clock signal under the control of the internal clock signal;

(k) trigger means coupled to the first, the second and the additional memory means for triggering same and hence for suspending the introduction of the samples therein;

(l) a display circuit coupled to the first, the second and the additional memory means for producing a first set of display signals for displaying in a first format the data recovered from the first and the additional memory means, and for producing a second set of display signals for displaying in a second format the data recovered from the second memory means; and

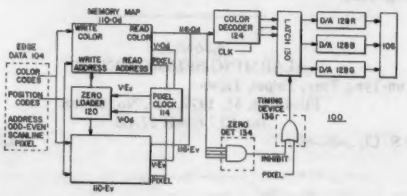
(m) a display device coupled to the display circuit for making visual presentation of the output data in response to the first and the second sets of display signals.

4,364,037

TRANSITION DATA IMAGE PROCESSOR

James T. Walker, Palo Alto, Calif., assignor to Cromemco Inc., Mountain View, Calif.

Filed Jun. 15, 1981, Ser. No. 274,036
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—744 **18 Claims**



1. An image processor for providing control signals to a raster type display device in response to input transition data, each unit of transition data corresponding to a transition in the image to be processed and displayed, each unit of transition data including a display portion defining the change in display caused by that transition and a position portion defining the position of that transition within the display relative to the other transitions in the image, comprising:

position decoder responsive to the position portion of each unit of transition data for receiving the display portion thereof and providing a data stream of transition display codes in display sequence spaced by non-transition codes which define the non-transition period between sequencial transition display codes;

transition decoder responsive to the transition display codes in the data stream for providing a sequence of decoded control signals;

maintenance means for receiving each decoded control signal from the transition decoder and holding the control signal during the non-transition period between sequential transition display codes for maintaining the display of the current transition on the display device during the non-transition period;

detector responsive to the non-transition codes between sequential transition display codes in the data stream from the position decoder for providing a non-transition signal during the non-transition period between the sequential transition display codes; and

advancing means responsive to the termination of the non-transition signal from the detector at the end of the non-transition period for causing the next decoded control signal from the transition decoder to advance into the maintenance means for controlling the display device until the next transition display code is decoded.

4,364,038

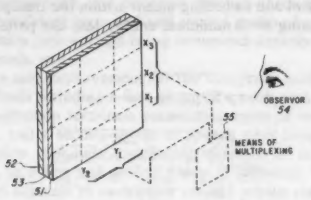
Patent Not Issued For This Number

4,364,039

STACKED ELECTRO-OPTIC DISPLAY

Perry A. Penz, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 25, 1980, Ser. No. 172,108
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—784 **4 Claims**



1. A matrix of liquid crystal cells comprising:

(a) A center substrate having a first and opposite second surface, said first surface having a plurality of first surface electrodes connected to a plurality of second surface electrodes contained on said second surface and aligned to the first surface electrodes, said center substrate comprising polarizing material;

(b) a quantity of first liquid crystal material maintained on said first surface of said center substrate;

(c) a first substrate having a first surface containing a plurality of electrodes, said first surface of said first substrate disposed to enclose the first liquid crystal material between the center substrate and the first substrate;

(d) a quantity of second liquid crystal material maintained on said second surface of said center substrate;

(e) a second substrate having a first surface and opposite second surface, said first surface containing a plurality of electrodes, said first surface of said second substrate disposed to enclose the second liquid crystal material between the center substrate and the second substrate, and disposed so that each of the electrodes on the first substrate is aligned to an aligned electrode in the plurality of electrodes on the second substrate;

(f) means for sealing applied around the perimeter of said center substrate applied so that the first substrate is sealed to the center substrate and the second substrate is sealed to the center substrate; and,

(g) means for electrically connecting each electrode on said first substrate to the aligned electrode on said second substrate.

4,364,040

ELECTROCHROMIC DISPLAY DRIVER WITH FACULTIES OF STABILIZING COLORATION CONTRAST AND INSURING UNIFORM BLEACHING CONDITION

Hiroshi Take; Katubumi Koyanagi, both of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 15, 1979, Ser. No. 94,568
Claims priority, application Japan, Nov. 16, 1978, 53-141983
Int. Cl.³ G09G *3/34*
U.S. Cl. 340—785 **11 Claims**

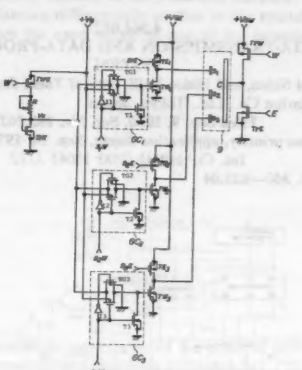
1. Driving circuit means adapted to color and bleach selected segment electrode contained within an electrochromic display means to provide a change from one display configuration to another within a predetermined time frame, comprising:

write means responsive to a write signal for applying a constant current to a first one or more segment electrodes to color same;

erase means responsive to an erase signal for applying a constant voltage to a second one or more segment electrodes to erase same;

time sharing means responsive to a said predetermined time frame for constraining said write means and said erase means to color and erase said first and second one or more electrodes in time shared sequence within said predetermined time frame; and

uniformizing means included in either said write means or said erase means, responsive to said time-sharing means



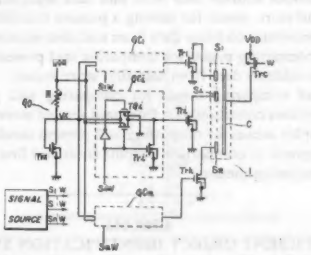
for short circuiting said first one or more segment electrodes following the coloration thereof with those previously colored electrodes common to said one and another display configurations between those periods in said predetermined time frame when said write means and erase means are actuated.

4,364,041

CONTRAST CONTROLLABLE ELECTROCHROMIC DISPLAY DRIVER CIRCUIT

Hiroaki Fukuda, Nara, and Shigeki Imai, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 56,629, Jul. 11, 1979. This application Apr. 24, 1981, Ser. No. 257,419
Claims priority, application Japan, Jul. 12, 1978, 53-85552; Jul. 12, 1978, 53-85553
Int. Cl.³ G09G *3/16*
U.S. Cl. 340—785 **6 Claims**



1. Coloring circuit means for driving a plurality of segment electrodes of differing sizes in an electrochromic display, comprising:

means for providing a constant current to the segment electrodes; and

a plurality of MOS transistors respectively connected to the segment electrodes for enabling the application of the constant current to the segment electrodes,

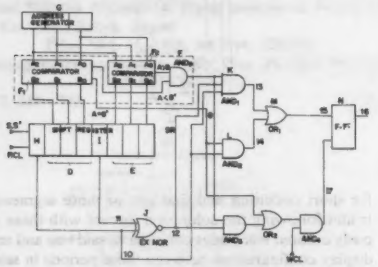
the sizes of the respective MOS transistors being selected so that a factor W/L associated with those MOS transistors is proportional to the dimensions of the respective corresponding segment electrodes associated therewith, where

W is the width of a channel of the MOS transistor and L is the length of the channel, controlling said constant current to supply to each of the said segment electrodes a substantially identical electric charge per unit size, resulting in uniform coloration thereof.

4,364,042
DATA-TRANSMISSION AND DATA-PROCESSING SYSTEM

Toshimi Shiun, and Hideo Fujii, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1980, Ser. No. 185,562
Claims priority, application Japan, Sep. 14, 1979, 54-117374
Int. Cl.³ H04Q *9/00*; H04J *3/12*
U.S. Cl. 340—825.04 **2 Claims**



1. A data-transmission and data-processing system comprising a plurality of data receiving stations each having a decoder and a central station for transmitting data containing address data and condition data to the decoders of the data receiving stations to be accessed, said address data and condition data being time-sequentially separated from each other, each of said decoders including:

data separating means for time-sequentially separating the address data and the condition data from the data received by the decoder;

address generating means for generating an address of the decoder;

first store means for storing a present address data and a previous address data from said data separating means;

second store means for storing a present condition data and a previous condition data from said data separating means;

first comparing means for comparing said present and previous address data from said first store means;

second comparing menas for comparing said present and previous condition data from said second store means; and

multiplex means for outputting said present condition data in response to comparison outputs from said first and second comparing means.

4,364,043
EFFICIENT OBJECT IDENTIFICATION SYSTEM

Peter H. Cole, West Lake Shore; Kamran Eshraghian, Hectorville, and Ashim K. Roy, Athelstone, all of Australia, assignors to The University of Adelaide, North Terrace, Australia

Continuation-in-part of Ser. No. 43,634, May 30, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 299,887
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.54 **20 Claims**

1. An identification system for objects comprising

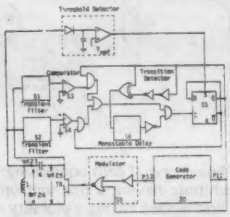
(A) a transmitter and receiver together forming an interrogator and including an transmitting near-field coupling element and a receiving near-field coupling element,

(B) a transponder having at least one near-field coupling element connected to receive at a first frequency a signal from the said transmitting near-field coupling element and to transmit at a second frequency a reply to the said receiving near-field coupling element,

(C) means within the transponder to form at least one resonant circuit containing the transponder coupling element and associated complementary energy storage element,

(D) means within the transponder for the generation of a reply code, characterised in that there are

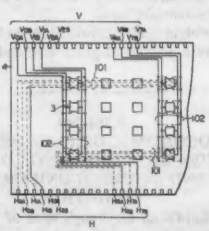
(E) control and switching means within the transponder for regulating with minimum energy loss the pattern of energy exchange between the transponder coupling element and the associated complementary energy storage element whereby at least subharmonics of the interrogation frequency are generated as a reply signal within the transponder coupling element, and means for further varying also with minimum energy loss the pattern of energy exchange between the transponder coupling element and its complementary energy storage element so that an information bearing reply is generated in the said reply signal.



4,364,044
SEMICONDUCTOR SPEECH PATH SWITCH

Masaaki Kusano, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 32,019
Claims priority, application Japan, Apr. 21, 1978, 53-46556
Int. Cl.³ H04Q *3/50*
U.S. Cl. 340—825.85 **3 Claims**



1. A semiconductor speech path switch comprising a plurality of semiconductor chips each including a cross-point element formed in said chips, first electrode means for forming a speech path connected with said cross-point element, and second electrode means for selectively actuating said cross-point element, and wiring plate means including pedestals respectively connected with the first and second electrode means on said chips, a group of terminals disposed on said wiring plate means, and a group of wirings for connecting said group of terminals with said group of pedestals, said plural chips being mounted on said wiring plate means by facedown bonding, thereby to form a matrix array,

wherein the improvement comprises said group of wirings comprising a first group of speech path wirings and selection path wirings constituting rows of said matrix array, and a second group of speech path wirings and selection

path wirings constituting columns of said matrix array, said first group of speech and selection path wirings forming a first layer and said second group of speech and selection path wirings forming a second layer separated from said first layer by an insulating layer, said first and second group of speech and selection path wirings intersecting to each other through said insulating layer, said first group of speech and selection path wirings being connected with said pedestals through through-holes in said insulating layer and said second group of speech and selection path wirings being connected directly with said pedestals; and

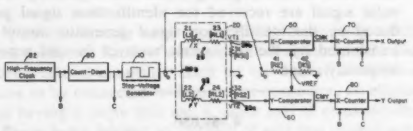
wherein said improvement further comprises said group of terminals including a first group of speech path terminals and selection terminals constituting rows of said speech path, and a second group of speech path terminals and selection terminals constituting columns of said speech path, said first and second group of terminals being disposed adjacent to each other on said wiring plate means.

4,364,045

DIGITIZED DISPLACEMENT TRANSDUCER

Leo Spiegel, Sharon, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Mar. 3, 1981, Ser. No. 240,107
Int. Cl.³ G01B *7/00*; G08C *19/08*
U.S. Cl. 340—870.31 **11 Claims**



1. Means for converting a displacement directly into a digital signal that accurately represents the magnitude of the displacement comprising,

a differential inductive transducer having first and seconds legs that each include inductive and resistive elements, said legs being arranged in a bridge configuration with a common input and separate outputs, and said inductive elements of each of said legs having a variable inductance,

means for producing and applying an electrical excitation signal to said common input, said signal being a train of step-voltage pulses of substantially constant maximum amplitude and pulse interval, said excitation signal producing first and second transient signals at said outputs of said first and second legs, respectively,

means for producing a constant reference voltage associated with said excitation signal,

means for producing a timing signal associated with each of said legs that is derived from a comparison of said transient output signal to the reference voltage, said transient signal having a duration that corresponds to the time constant of the leg and is a direct measure of the instantaneous displacement of said leg, and

means for converting said timing signals into a digital count.

4,364,046

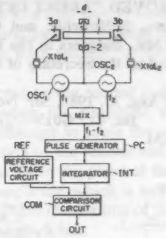
ROTATION ANGLE DETECTING DEVICE

Hiroomi Ogasawara, 3821-4, and Masaomi Ogasawara, 3833, both of Yamakita, Yamakita-Machi, Ashigarakami-Gun, Kanagawa-Ken, Japan

Filed Sep. 11, 1979, Ser. No. 74,570
Claims priority, application Japan, Sep. 11, 1978, 53-111412
Int. Cl.³ G01R *27/26*; G01L *1/14*; G08C *19/10*
U.S. Cl. 340—870.37 **10 Claims**

1. A device for measuring the amount of rotation of a rotatable object comprising:

(a) sensor means including a first electrode plate; a pair of second electrode plates confronting said first electrode plate and spaced therefrom by a first distance and a second distance respectively to form therewith a pair of capacitors; and means responsive to rotation of the rotatable object for producing relative rotation between (i) said first electrode plate and (ii) said pair of second electrode plates in an eccentric manner to vary the first distance and the second distance differentially so that as the rotatable object rotates the capacitance of one of the capacitors increases while the capacitance of the other of the capacitors correspondingly decreases differentially;



(b) two oscillator circuits, each having an associated one of the capacitors incorporated therein as a frequency varying component; and

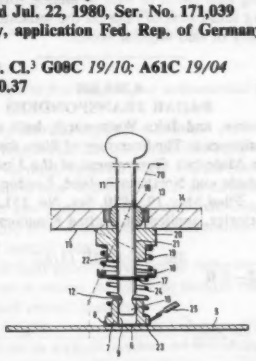
(c) mixer means connected to said two oscillator circuits for providing a frequency difference signal determined by the difference in the frequencies of said two oscillator circuits and indicative of the extent of rotation of the rotatable object.

4,364,047

CONTROL LEVER SWITCH

Michael A. Archer, Norderstedt, Fed. Rep. of Germany, assignor to Firma Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 22, 1980, Ser. No. 171,039
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931489
Int. Cl.³ G08C *19/10*; A61C *19/04*
U.S. Cl. 340—870.37 **12 Claims**



1. A control lever switch for providing steplessly adjustable control values for a plurality of switch outputs, particularly directional commands, which are adjustable by means of the control lever switch, in which output signals can be selected both in respect of direction and magnitude by single-handed operation of a control lever, the switch comprising a control lever, bearing means in which the control lever is mounted for universal pivoting movement, a transmitter electrode carried by the control lever, control electrodes arranged in a spaced array around the control lever and its transmitter electrode when located in their rest position, a circuit board on one side of which said control electrodes are provided and against the

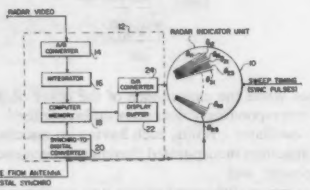
other side of which said transmitter electrode bears directly such that a capacitive coupling is obtained between said control electrodes and the transmitter electrode, the transmitter electrode being adjustable both radially relative to said control electrodes and circumferentially of the array, output control channel means connected to said electrodes, and input energising means connected to the transmitter electrode.

4,364,048

INTERLEAVED SWEEP RADAR DISPLAY FOR IMPROVED TARGET DETECTION

William M. Waters, Millersville, and George J. Linde, Accokeek, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1980, Ser. No. 177,707
Int. Cl.³ G01S *7/22*
U.S. Cl. 343—5 EM **5 Claims**



1. In a display system of a radar having a scanning antenna and an indicator, said system receiving video signals and antenna pedestal synchro signals, a method for improving radar detection of a moving target comprising:

digitizing said video and synchro signals;

adding data from each range cell of each sweep line within an angular sector of the antenna scan to data from corresponding range cells of other sweep lines in the angular sector for forming a batch of data;

storing the batch of data;

converting said batch of data to analog form; and

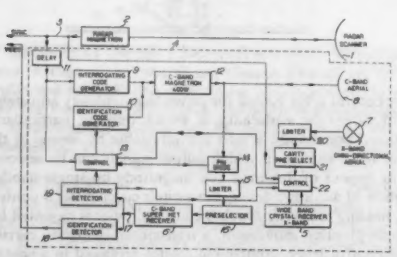
displaying said batch of data on the indicator at an azimuth boundary of said angular sector.

4,364,049

RADAR TRANSPONDERS

Alan R. Moore, and John Waterworth, both of Fareham, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 19, 1980, Ser. No. 151,531
Claims priority, application United Kingdom, May 23, 1979, 7917859
Int. Cl.³ G01S *13/87*
U.S. Cl. 343—6 R **3 Claims**



1. A radar interrogator/transponder for cooperation with a primary pulse radar system comprising:

(a) a detector responsive to signals received in a first frequency range of said primary pulse radar;

(b) a transmitter/receiver adapted to operate in a second frequency range;

(c) an interrogating signal generator circuit connected to the transmitter/receiver;

(d) a synchronising connection from the primary pulse radar to the interrogating signal generator circuit;

(e) a time delay circuit having an output connected to the interrogating signal generator circuit and to the transmitter/receiver through the switching means such that the interrogating mode is delayed relative to one primary radar pulse signal so as to occur a short time in advance of the subsequent primary radar pulse signal;

(f) an identification signal generator circuit for producing an identification signal;

(g) switching means to selectively connect the identification signal generator to the transmitter/receiver when in a transponding mode and to disconnect the identification signal generator from the transmitter/receiver when in an interrogating mode;

(h) first circuit means responsive to receiving an interrogating signal from another interrogator/transponder in said second frequency range; and

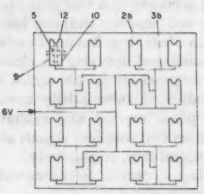
(i) second circuit means responsive to receiving an identification signal from another interrogator/transponder in said second frequency range; the outputs from the said first circuit means and the detector being so connected that when an interrogating signal and a primary radar pulse signal are received the identification signal produced by the identification signal generator circuit is transmitted by the transmitter/receiver in said second frequency range.

4,364,050

MICROSTRIP ANTENNA

Alfred R. Lopez, Commack, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,477
Int. Cl.³ H01Q *1/38*
U.S. Cl. 343—700 MS **23 Claims**



1. A dual polarized microstrip antenna comprising:

means for radiating an rf signal, said radiating means having first and second opposing surfaces forming first and second intersecting slots having different orientations, said first and second slots forming a plurality of cross slots;

a first dielectric substrate having first and second opposing surfaces, the first surface of said radiating means being adjacent the first surface of said first dielectric substrate;

a second dielectric substrate having first and second opposing surfaces, the second surface of said second dielectric substrate being adjacent the second surface of said means for radiating;

a first microstrip feed network having first and second opposing surfaces, the second surface of said first microstrip feed network associated with said cross slots and being adjacent the second surface of said first dielectric substrate; and

a second microstrip feed network associated with said cross slots and having first and second opposing surfaces, the first surface of said second microstrip feed network being

adjacent the first surface of said second dielectric substrate.

4,364,051

MOBILE ANTENNA MOUNTING ASSEMBLY WITH RESILIENT LOCKING MEANS

Koji Yamashita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1980, Ser. No. 195,307

Claims priority, application Japan, Oct. 11, 1979, 54-140590[U]

Int. Cl.³ H01Q *1/32*

U.S. Cl. 343—715 7 Claims

1. A mobile antenna mounting assembly comprising a first coaxial connector fixed on a body panel of an automobile and a second coaxial connector fixed on the end of an antenna element to be connected with said first connector, an elliptic flange having a major axis and a minor axis of cross-section, said flange being formed on the base of said first coaxial connector; a resilient cap slidably mounted in the axial direction along said second coaxial connector to cover or uncover it, said cap having a groove on the inner circumference thereof to facilitate an engagement of said groove with said flange when said first and second coaxial connectors are connected to each other, said cap being released by squeezing it together on opposing sides of the minor axis of said elliptic flange.

4,364,052

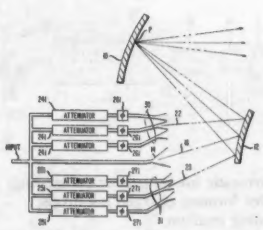
ANTENNA ARRANGEMENTS FOR SUPPRESSING SELECTED SIDELOBES

Edward A. Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1980, Ser. No. 201,816

Int. Cl.³ H01Q *19/14*

U.S. Cl. 343—781 P 6 Claims



1. An antenna arrangement for suppressing selected sidelobes, the antenna comprising:

a main focusing reflector (10); and

a first feed arrangement (14) disposed to permit radiation of a first beam of electromagnetic energy therefrom in a particular direction along a feed axis of the antenna arrangement such that a central ray of the first beam impinges a particular point (P) on the main focusing reflector

characterized in that

the antenna arrangement further comprises:

a second and a third feed arrangement (20, 21) disposed on oppcsite sides of, and a predetermined equal distance from the first feed arrangement and in a plane corresponding to the plane of the selected sidelobes to be suppressed, the second and third feed arrangement being capable of radiating a second and a third beam, respectively, of electromagnetic energy, comprising the same signal as transmitted in the first beam, in a direction to cause a central ray of the second and third beams to impinge the same particular point (P) on the main reflector as the central ray of the first beam; and

means (24, 26) connected to the second and third feed arrangement for adjusting the amplitude and phase of a signal passing therethrough to cause the combined resultant E-field distribution of the second and third beams at the edge of the reflector in the plane of the feed arrangements to have an amplitude which is substantially equal and opposite to an E-field distribution of the first beam for reducing selected far sidelobes.

4,364,053

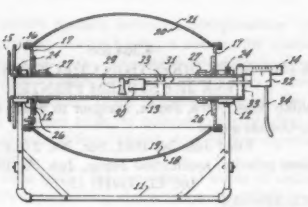
INFLATABLE STRESSED SKIN MICROWAVE ANTENNA

William Hotine, P.O. Box 216, Albion, Calif. 95410

Filed Sep. 18, 1980, Ser. No. 188,308

Int. Cl.³ H01Q *15/20*

U.S. Cl. 343—915 14 Claims



1. An improved inflatable microwave antenna said improvement comprising:

a central rigid cylindrical support member;

a microwave transparent, airtight, trunnion tube extending diametrically through opposite walls of said central member, said trunnion tube walls joined in an airtight manner to the walls of said central member and extending beyond the walls of said central member to form trunnions for for pivoting said central member;

a formed thin airtight spherically shaped reflector which is reflective to microwaves joined in an airtight manner to a first end of said central member;

a formed thin airtight cover which is transparent to microwaves joined in an airtight manner to the second end of said central member;

an antenna feed supported inside said trunnion tube at the focal plane of said reflector said feed movable in said focal plane and said feed connected to associated microwave equipment utilizing said antenna;

a pneumatic valve located to enable gaseous pressurization of the interior space enclosed by said reflective skin, said cover skin, said walls of said trunnion tube and said central member, said gaseous pressurization sufficiently exceeding external gaseous pressure to stress said reflective skin to its formed shape and to stress said cover skin to its formed shape, and

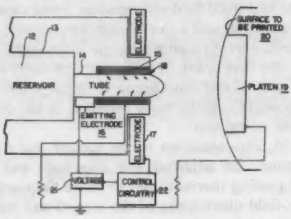
a supporting frame carrying bearings fitting said trunnions.

4,364,054

METHOD AND APPARATUS FOR FLUID JET PRINTING

Arnold J. Kelly, Princeton Junction, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 2, 1981, Ser. No. 239,217
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—1.1 44 Claims



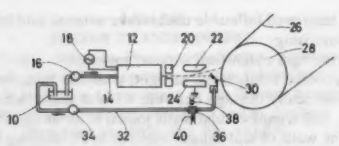
1. A method of fluid jet printing, comprising the steps of:
(a) introducing a supply of ink fluid to a fluid jetting means comprising at least one capillary-sized orifice; and
(b) forceably injecting a controlled amount of electrical charge inside said ink fluid wherein said charge will be substantially trapped by said ink fluid, said charge being below a charge level necessary to cause jet atomization of said ink fluid, but of sufficient amount to permit proper formation and targeting of said ink fluid.

4,364,055

INK ISSUANCE DIRECTION CHECK SYSTEM IN AN INK JET SYSTEM PRINTER

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 24, 1981, Ser. No. 276,971
Claims priority, application Japan, Jun. 30, 1980, 55-89773
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 13 Claims



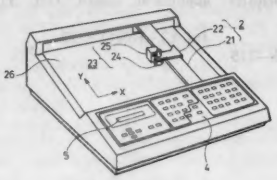
7. Means for terminating the supply of ink liquid to an ink jet nozzle in an ink jet system printer in response to an abnormal deflection condition, comprising:
nozzle means for emitting a stream of ink drops;
ink liquid supply means for providing ink liquid to said nozzle means;
means for selectively imparting calibrated deflections to each of the ink drops in said stream including a predetermined deflection to a substantial number of said ink drops;
gutter means catching said substantial number of ink drops under normal calibrated deflection conditions;
ink liquid return means from said gutter means to said ink liquid supply means for returning said ink liquid from the former to the latter; and
detection means in said ink liquid return means responsive to the absence of ink liquid for a predetermined time period as an indication of the occurrence of an abnormal deflection condition for constraining said ink liquid supply means to cease providing ink liquid to said nozzle means.

4,364,056

INTERACTIVE GRAPHIC SYSTEM

Yoshihiro Suzuki; Shuichi Nakagawa; Yasuo Wako; Yoshihiro Ogawa; Mamoru Yamaguchi, and Toshio Kimura, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,380
Int. Cl.³ G01D *9/40*
U.S. Cl. 346—29 6 Claims



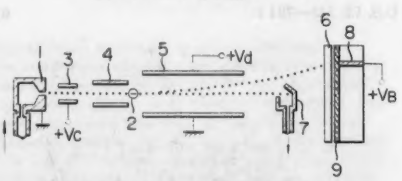
1. An interactive graphic system comprising:
a plotting means having a recording head with a recording pen positioned therein which is adapted to be driven by input signals, said plotting means having a plotting surface for recording lines, symbols or marks applied therein by said recording pen,
a keyboard including a plurality of special keys for various functions with respect to drawing a bar graph, a line graph, and a pie chart and general keys for characters, digits and symbols,
a controller coupled to said keyboard for executing predetermined programs according to data from said keyboard, and
display means coupled to said controller for displaying instructions having an appropriate input of necessary data for plotting in a step-by-step manner in an interactive system, whereby lines, symbols or marks can be directly recorded on said plotting surface of said plotting means by said keyboard.

4,364,057

ELECTROSTATIC INK-JET PRINTER

Yutaka Ebi, Kawasaki, and Kikuo Kubo, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,240
Claims priority, application Japan, May 11, 1979, 54-57671
Int. Cl.³ G01D *15/8*
U.S. Cl. 346—75 5 Claims



1. An electrostatic ink-jet printer comprising:
(a) means for forming charged ink drops;
(b) a recording medium;
(c) means for deflecting the charged ink drops, interposed between the charged ink drop forming means and the recording medium;
(d) an insulating layer disposed adjacent to the back of the recording medium; and
(e) an ink-drop-landing-position control electrode provided in such a way that one end of said control electrode is positioned adjacent to the insulating layer at the back of a

recording medium in opposed relationship with a predetermined position on said recording medium at which a charged ink drop must be deposited or placed, a control voltage is applied to said control electrode in such a way that the electric lines of force of the electric field established by said control electrode are concentrated substantially at said predetermined landing position, the polarity of said control voltage being opposite to that of the charge on the ink drops.

4,364,058

INK DROP CHARGING DEVICE

Masayoshi Tamai; Michio Ueda, and Masatsugu Kikuchi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,621
Claims priority, application Japan, Oct. 29, 1979, 54-138735
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **4 Claims**

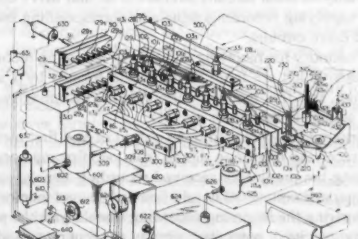
1. An ink droplet charging device comprising: a nozzle for jetting an ink stream, said ink stream being divided into ink droplets; a charging electrode disposed at a position where said ink stream divides into said ink droplets for controlling a charge condition of said ink droplets according to whether said ink droplets are utilized for printing; and means for successively applying positive, negative and ground voltage levels to said charging electrode in synchronization with the formation of said ink droplets to deposit a charge on at least some of said ink droplets so that said charged ink droplets have an indentical type charge deposited thereon.

4,364,059

INK JET PRINTING APPARATUS

Haruhiko Nagayama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,387
Claims priority, application Japan, Dec. 17, 1979, 54-163808; Dec. 17, 1979, 54-163809
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. An ink jet printing apparatus including an ink ejection head having a chamber therein and at least one ink ejection port communicating with the chamber, an ink reservoir containing ink and pump means for pumping ink from the reservoir to the chamber, characterized by comprising;

a passageway communicating with the chamber;

valve means disposed in the passageway, the passageway leading from the chamber to the reservoir; and

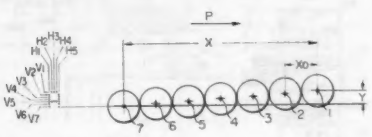
control means for opening the valve means at a start of operation of the apparatus to recirculate ink from the reservoir through the pump means, chamber and passageway back to the reservoir and subsequently closing the valve means, the passageway and said at least one ink ejection port being constructed such that, when the valve means is open, ink is not ejected from said at least one ejection port.

4,364,060

NOZZLE POSITION DEVIATION COMPENSATION ARRANGEMENT FOR INK JET PRINTING DEVICE

Koichiro Jinnai, Kawasaki; Masanori Horike, Yokohama; Kyuhachiro Iwasaki, Fujisawa, and Yutaka Kodama, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 23,290, Mar. 23, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,203
Claims priority, application Japan, Mar. 25, 1978, 53-33619
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **1 Claim**



1. A digital nozzle position deviation compensation system for an ink jet printing device having n nozzles for producing character-forming ink dots, said nozzles being vertically staggered with respect to each other and horizontally positioned with respect to each other in the printing direction, the horizontal distance between adjacent nozzles corresponding to m characters or character-forming ink dots said compensation system comprising:

a character code buffer for providing a series of character code signals representing characters to be printed;

a random access memory having m×n memory elements for storing respective ones of said character code signals;

an address counter including a modulo-m counter circuit and a modulo-n counter circuit, the combined outputs of said circuits constituting an address code for specifying the location in said memory at which a corresponding character code signal is to be stored;

a character generator for providing data respecting the ink-dot pattern of each character to be printed, in response to a corresponding code signal from said memory and a designation signal specifying the particular dot column of said character to be printed;

a control circuit for (i) coupling said character code signals from said buffer to said memory seriatim, (ii) stepping said address counter in synchronism with the relative movement between said nozzles and a recording medium in said printing direction to cause successive character code signals to be stored in said memory at addresses differing from the addresses of the immediately preceding character code signals by n units, (iii) causing said character code signals to be sequentially read from said memory and coupled to said character generator in the order of the addresses of the elements of said memory, and (iv) providing said designation signal to said character generator in synchronism with the stepping of said address counter, so that character code signals are stored in said memory at address intervals of n units and are read from said memory at sequential addʳess intervals; and

print control means responsive to said data from said character generator for causing said nozzles to sequentially print ink dots on said recording medium in accordance,

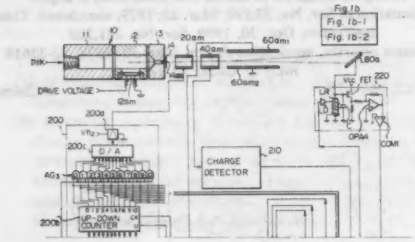
whereby the effect of horizontal offset of said nozzles is compensated, so that said nozzles may produce groups of ink dots on said recording medium corresponding to said characters.

4,364,061

INK JET PRINTING APPARATUS COMPRISING AUTOMATIC INK JET DEFLECTION ADJUSTMENT MEANS

Masanori Horike, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,184
Claims priority, application Japan, Feb. 28, 1980, 55-24302; Feb. 28, 1980, 55-24303
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **11 Claims**



1. An ink jet printing apparatus including an ink ejection head for ejecting a jet of ink, charging means for electrostatically charging the ink jet and deflection means for electrostatically deflecting the charged ink jet, characterized by comprising:

sweep means for causing the ink jet to sweepingly deflect along an axis;

target electrode means disposed along said axis and having an edge intersecting said axis;

integrating circuit means connected to the target electrode means for integrating a voltage induced on the target electrode means; and

control means for controlling the sweep means to cause the ink jet to sweepingly deflect along said axis toward said edge, sensing an output voltage of the integrating circuit means, controlling the sweep means to stop sweepingly deflecting the ink jet when the output voltage of the integrating circuit means has a predetermined value indicating that the ink jet has just passed said edge and producing an electric signal having a magnitude corresponding to an amount of deflection force which the sweep means causes to be applied to the ink jet at a time the output voltage of the integrating circuit means has the predetermined value.

4,364,062

PAPER EDGE DETECTION IN A PRINTER

Hirotoshi Matsui, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

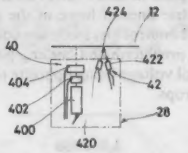
Filed May 21, 1981, Ser. No. 266,130
Claims priority, application Japan, May 27, 1980, 55-71197
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**

2. A printing device comprising

a recording medium and a carriage, said recording medium being disposed in front of said carriage,

said carriage containing a printing head for conducting a printing operation and an optical recording medium edge detection system, both of said printing head and said optical detection system facing said recording medium, and

means for moving said carriage in the lateral direction across said recording medium, whereby said printing head effects a printing operation and said optical detection system detects the edge of said recording medium.

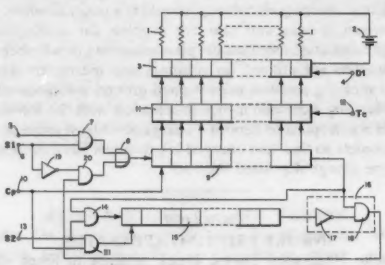


4,364,063

THERMAL RECORDING APPARATUS

Gousuke Anno, and Takashi Oozeki, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 26, 1981, Ser. No. 238,602
Claims priority, application Japan, Mar. 31, 1980, 55-41542
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **4 Claims**



1. A thermal recording apparatus comprising:

a plurality of thermal resistive elements placed in line;

a plurality of drive circuits connected to said thermal resistive elements for driving corresponding ones of said thermal resistive elements;

a plurality of latch circuits connected to said drive circuits for supplying recording signals to corresponding ones of said drive circuits;

a first memory for receiving and storing incoming recording signals which are input in series and formed by 1 and 0 signals, said first memory supplying the incoming recording signals to said latch circuits;

a second memory coupled to an output of said first memory for receiving recording signals from said first memory and storing the previously received recording signals; and

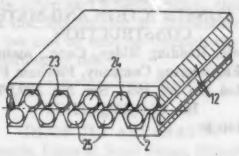
a comparator connected to said first and second memory for comparing the incoming recording signals with the previously received recording signals to generate modified recording signals, the modified recording signals including 0 signals which are generated by said comparator when 1 signals in the incoming recording signals follow 1 signals in the previously received recording signals, said comparator being coupled to said first memory to store the modified recording signals in said first memory, said first memory supplying the modified recording signals to said latch circuits after the incoming recording signals are supplied to said drive circuits.

4,364,064

OPTICAL DEVICE FOR NON-CONTACT RECORDING

Peter Baues, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,001
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938224
Int. Cl.³ G01D 9/42
U.S. Cl. 346—107 R 6 Claims



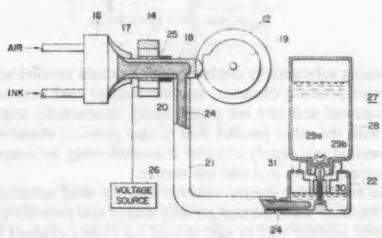
1. In an optical device for non-contact recording image information on a recording material, said device having a cylinder for supporting a sheet type recording material in a stretched cylindrical configuration, a recording head being mounted on a guide device for movement parallel to the cylindrical axis with the head being spaced a minimum distance from said stretched recording material, said recording head containing a plurality of light waveguides in the form of glass fibers having exit ends and entrance ends, said exit ends facing the recording material and being arranged linearly and densely packed adjacent to one another, said entrance ends positioned to receive modulated light from individual light sources so that the image information in the form of image points is modulated into the individual light sources to be carried by the individual waveguides to the exit end for projection onto the recording medium, the improvements comprising the recording head including a pair of adjustment plates having a plurality of individual straight grooves of sufficient size to entirely receive a single waveguide fiber extending inward from one edge surface of each plate and with each plate having grooves for half of the waveguides forming the recording head, said waveguides being secured in said grooves with the exit ends being adjacent said one edge surface and being oriented in a line extending perpendicular to the axis of the cylinder, said straight grooves of each adjustment plate converging from a point adjacent the entrance end of each of the fibers towards the one edge surface having the exit ends so that the spacing between the exit ends of each of the fibers is substantially smaller than the spacing between the entrances ends to enable obtaining a maximum resolution of the image information being recorded on said material while maintaining space for the light source, said plates being positioned together with the grooves of one plate facing the grooves of the other plate and being disposed therebetween to form two rows of grooves with each plate having portions between adjacent grooves being aligned with the grooves of the opposite plate to act to partially close the grooves of the opposite plate, said fibers in said grooves forming two closely spaced rows with adjacent fibers being in different rows, said recording head including a light source member secured thereon, said light source member including a chip of a suitable semiconductor material having the individual light source for each of the waveguides and means enabling individual exciting of each of the light sources in accordance with the image information to be produced and being a multipoint connector containing the necessary electrical connections for each individual light source, said light sources comprising light emitting diodes being formed in the chip and being arranged in two rows with a spacing corresponding to the spacing of the entrance ends of the fibers and with the sources in one row being slightly offset with respect to the sources of the other row the same amount as said fibers so that with the securing of the light source member onto the recording head, the individual light sources are aligned with the respective entrance ends of the fibers, said plates and said member being encapsulated in a resinous potting material, and said recording head having a concave surface facing the cylindrical surface, said concave surface having a radius of curvature greater than the radius of curvature of the cylinder by an amount equal to the spacing therebetween.

4,364,065

INK JET WRITING APPARATUS HAVING A NOZZLE MOISTENING DEVICE

Kiyoshi Yamamori, Kanagawa; Yasutaka Hiromori, Sagamihara, and Akira Mizoguchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Aug. 12, 1980, Ser. No. 177,372
Claims priority, application Japan, Aug. 13, 1979, 54-111500[U]
Int. Cl.³ B41J 3/04; G01D 15/18
U.S. Cl. 346—140 R 12 Claims



1. An ink jet writing apparatus comprising:
an ink jet writing head having a nozzle from which ink issues in use;
an elastic enclosure engageable with a front face of said writing head to define a fluid-tight chamber enclosing the opening of said nozzle;
a source of ink diluting fluid;
a conduit member connected between said fluid source and said elastic enclosure, said member including therein a capillary member for transmitting said fluid from said source to said enclosure by capillary action to permit evaporation of said fluid in said chamber; and
means for producing sealing contact between said writing head and said enclosure to create said fluid-tight chamber when said writing head is not in use.

4,364,066

INK JET PRINTING HEAD

Haruhiko Koto, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Sep. 22, 1980, Ser. No. 189,461
Claims priority, application Japan, Sep. 21, 1979, 54-121621
Int. Cl.³ G01D 15/18
U.S. Cl. 346—140 R 16 Claims

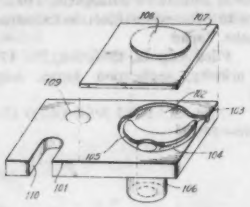
1. An ink jet printer head for an ink-on-demand jet type printer, comprising:
a baseplate;
a vibration plate fixedly abutting said baseplate;
a pressure chamber for containing ink having substantially parallel opposed walls, one said parallel wall being a portion of said baseplate, the other said parallel wall being a portion of said vibration plate;
a piezoelectric element attached to said vibration plate, electrical energization of said piezoelectric element causing said parallel wall of said vibration plate to deflect,

internal volume of said pressure chamber being reduced by said vibration plate deflection;

an ink nozzle communicating between said pressure chamber and an external surface of said ink jet print head, wherethrough ink from said chamber is ejected;

a first ink supply channel communicating between a supply of ink and said pressure chamber, the inlet of said first ink supply channel to said pressure chamber being opposite to said ink nozzle;

one wall of said first supply channel and said ink nozzle



being substantially coplanar with one said parallel wall of said pressure chamber, another wall of said first supply channel and said ink nozzle being substantially coplanar with the other parallel wall of said pressure chamber;

a second ink supply channel communicating between said supply of ink and said ink nozzle;

said second ink supply channel has one wall substantially coplanar with one said parallel wall of said pressure chamber, another wall of said second ink supply channel being substantially coplanar with the other parallel wall of said pressure chamber.

4,364,067

HIGHLY INTEGRATED INK JET HEAD

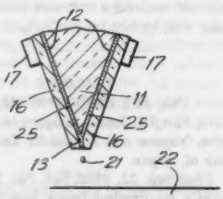
Haruhiko Koto, and Junichi Okada, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

Filed Oct. 28, 1980, Ser. No. 201,104

Claims priority, application Japan, Oct. 29, 1979, 54-139531; Oct. 29, 1979, 54-139532

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **10 Claims**



1. A highly integrated ink jet head for printing on a print recording medium, comprising:

a baseplate;

a pair of vibration plates, each vibration plate abutting and attached to one of opposite sides of said baseplate;

pressure chambers for containing ink between each said vibration plate and said baseplate;

a supply channel for containing ink connected to each said pressure chamber;

a plurality of piezoelectric elements attached to each said vibration plate, each said piezoelectric element being in registry with one of said pressure chambers;

a plurality of nozzles, each said nozzle connected with one of said pressure chambers;

said opposed baseplate sides converging toward said nozzles and forming a narrowed end, said vibration plates extending on both sides beyond said narrowed end and abutting one to the other, said nozzles being formed between said abutting vibration plates, ink being ejected from associated nozzles when said piezoelectric elements are energized to deflect said vibration plates.

4,364,068

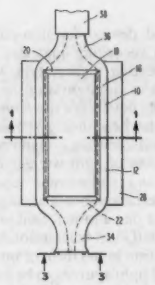
INK JET CONSTRUCTION AND METHOD OF CONSTRUCTION

Arthur M. Lewis, Redding Ridge, Conn., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jan. 30, 1981, Ser. No. 229,993

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **26 Claims**



1. An ink jet adapted to project droplets of ink comprising:

a discrete glass tube having integrally formed walls of substantially uniform thickness, one of said walls being substantially planar and having a thickness of 1 to 20% of the length of said one of said walls transverse to the axis of the glass tube;

a transducer coupled to one of said walls of said tube, the modulus of elasticity for the tube being substantially equal to the modulus of elasticity for the transducer;

an orifice formed at the end of said tube for emitting droplets when said wall is moved in response to the state of said transducer.

4,364,069

MULTI-INK JET HEAD

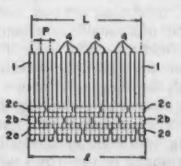
Hiroshi Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,113

Claims priority, application Japan, May 8, 1980, 55-59960

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **2 Claims**



1. A multi-ink-jet head comprising

(a) a plurality of ink distribution tubes which are extended in a row in parallel with each other and spaced apart from

each other by a predetermined pitch and each of which is communicated with a nozzle and an ink manifold; and

(b) n adjacent piezoelectric element arrays, each array comprising a plurality of piezoelectric elements each of which is mounted on each group comprising n adjacent ink distribution tubes and the piezoelectric elements in one array being staggered by one of the ink distribution tubes from the piezoelectric elements in the preceding array so that each ink distribution tube is mounted with n piezoelectric elements each belonging to each of said n piezoelectric element arrays;

whereby only when said n piezoelectric elements mounted on one ink distribution tube are simultaneously excited, a stream of ink can be emitted through the nozzle of said one ink distribution tube.

4,364,070

DROP JET APPARATUS

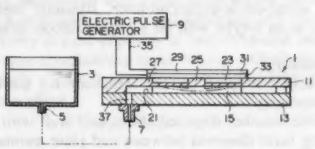
Yasumasa Matsuda, Hitachi; Syoji Sagae, Hitachiohta; Masatoshi Kasahara, Hitachi, and Hiroyasu Uchida, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,207

Claims priority, application Japan, Jul. 4, 1980, 55-90589

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **9 Claims**



1. A drop jet apparatus comprising housing means defining a pressure chamber;

nozzle means communicating with said pressure chamber for jetting drops therethrough;

diaphragm means, included in said housing means for defining a part of said pressure chamber, said diaphragm means having a thick central portion at the center and a thin portion surrounding said thick central portion;

electro-mechanical transducer means, disposed on said housing so as to bridge said thin portion and secured to said diaphragm means at said thick central portion for deforming said diaphragm according to electric signals;

liquid reservoir means communicating with said pressure chamber for storing therein a liquid; and

electric signal generator means electrically connected to said electro-mechanical transducer means.

4,364,071

ELECTROGRAPHIC RECORDING

Donald E. Shafer, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 29, 1980, Ser. No. 201,691

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—153.1 **6 Claims**

1. An electrographic recording system for recording information on an electrographic recording medium comprising

a non-magnetic platen over which said recording medium passes;

a multipolar magnetic structure;

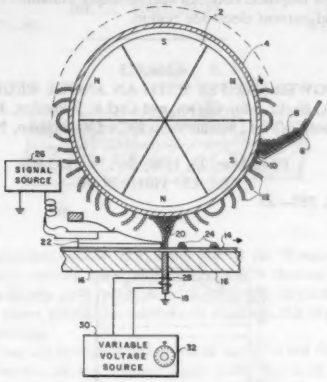
a non-magnetic shell;

means mounting said shell for motion about said magnetic structure with the peripheral surface of said shell spaced a small predetermined distance above said platen

means for supplying magnetic toner particles to the outer surface of said shell

a magnetically permeable member positioned substantially in the plane of said platen and extending parallel to the rotational axis of said shell, defining a recording station, said magnetically permeable member concentrating the magnetic field produced by said magnetic structure to form a dynamic bridge of toner particles between said shell and said recording medium at said recording station;

means for superimposing a selectively variable magnetic field on said permeable member whereby to selectively vary the definition of said dynamic bridge;



a portion of said platen being electrically conductive;

an array of recording electrodes spaced between the peripheral surface of said shell and said platen with the extremities of said electrodes positioned to conduct electrical energy to said toner particles in said bridge at said recording station.

4,364,072

STATIC INDUCTION TYPE SEMICONDUCTOR DEVICE WITH MULTIPLE DOPED LAYERS FOR POTENTIAL MODIFICATION

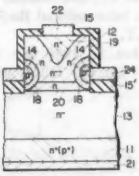
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Mar. 8, 1979, Ser. No. 18,774

Claims priority, application Japan, Mar. 17, 1978, 53/31223; Jan. 11, 1979, 54/2378; Jan. 24, 1979, 54/7609

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **4 Claims**



1. A static induction type semiconductor device formed in a semiconductor wafer having a pair of principal surfaces, comprising:

a low resistivity source region of one conductivity type exposed at one of said principal surfaces;

a high resistivity main channel region of said one conductivity type disposed adjacent to said source region;

a low resisitivity gate region of the other conductivity type opposite to said one conductivity type extending from said one principal surface into said semiconductor wafer and substantially surrounding said main channel region;

a subsidiary channel region having said one conductivity

type and a resistivity lower than that of said main channel region but higher than that of said source region and disposed adjacent to said main channel region and to said gate region on that side thereof facing the other one of the principal surfaces;

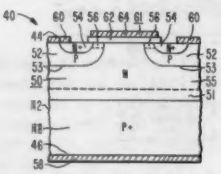
a low resistivity current electrode region exposed at other one of the principal surfaces; and

a high resistivity auxiliary region of said one conductivity type disposed between said subsidiary channel region and said current electrode region.

4,364,073
POWER MOSFET WITH AN ANODE REGION

Hans W. Becke, Morristown, and Carl F. Wheatley, Jr., Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,902
Int. Cl.³ H01L *29/00*
U.S. Cl. 357—23 **17 Claims**



1. A vertical MOSFET device, comprising:

a semiconductor substrate, including in series, adjacent source, body, drain and anode regions of alternate conductivity type;

the body region being adjacent to a surface of the substrate;

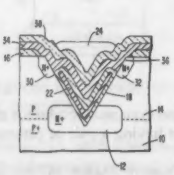
the source and drain regions being spaced so as to define a channel portion in the body region at said surface;

the source, body and drain regions having a first forward current gain α_1 and the anode, drain and body regions having a second forward current gain α_2, such that the sum $\alpha_1+\alpha_2$ is less than unity, and no thyristor action occurs under any device operating conditions.

4,364,074
V-MOS DEVICE WITH SELF-ALIGNED MULTIPLE ELECTRODES

Richard R. Garnache, South Burlington; Donald M. Kenney, Shelburne, both of Vt., and Nandor G. Thoma, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,668
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **6 Claims**



1. A semiconductor device comprising;

a semiconductor substrate having at least one recess provided in a surface thereof;

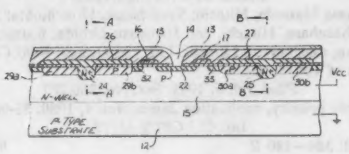
a first dielectrically insulated conductive layer on said substrate having at least a portion of which extends into said recess, said first conductive layer having at least a portion of at least one edge thereof terminating within said recess below the level of the surface of said substrate, and

a second conductive layer overlying at least a portion of said first conductive layer which extends into said recess, said second conductive layer making physical contact to said substrate within said recess below the level of the surface of said substrate.

4,364,075
CMOS DYNAMIC RAM CELL AND METHOD OF FABRICATION

Mark T. Bohr, Beaverton; Kenneth K. Yu, Portland; Ronald J. C. Chwang, Beaverton, and Neil C. Berglund, Lake Oswego, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 2, 1980, Ser. No. 182,870
Int. Cl.³ H01L *29/78, 27/02*
U.S. Cl. 357—23 **8 Claims**



1. A metal-oxide-semiconductor, dynamic memory cell, disposed in an n-type well on a p-type silicon substrate comprising:

a transistor;

a capacitor coupled to said transistor for storing charge comprising:

a plate member disposed above said well with an insulating layer disposed between said plate member and said well;

a p-type region disposed within said well below said plate member;

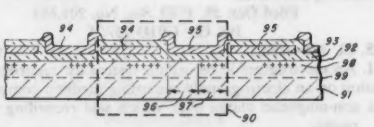
an n-type buried contact region disposed within said p-type region, said n-type region extending into said well for coupling said plate member to said well;

whereby a high density dynamic memory cell is realized which has high immunity to failures associated with alpha particles.

4,364,076
CO-PLANAR WELL-TYPE CHARGE COUPLED DEVICE WITH ENHANCED STORAGE CAPACITY AND REDUCED LEAKAGE CURRENT

Pallab K. Chatterjee, Dallas, and Aloysious F. Tasch, Jr., Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 26, 1977, Ser. No. 828,080
The portion of the term of this patent subsequent to Apr. 8, 1997, has been disclaimed.
Int. Cl.³ H01L *29/78*; G11C *19/28, 11/34*
U.S. Cl. 357—24 **8 Claims**



1. A charge device comprising:

a substrate of semiconductor material having a dopant impurity of P-type conductivity, said substrate having a first surface;

a body of insulating material disposed on said first surface of said substrate;

means defining a surface charge transfer channel in said substrate lying along said first surface of said substrate;

first and second spaced apart phase electrodes overlying said surface channel in transverse relation thereto and arranged with respect to said body of insulating material so as to provide a layer of insulating material of uniform thickness between each of said phase electrodes and said first surface of said substrate;

spaced relatively shallow regions having a dopant impurity of N-type conductivity lying near said first surface of said substrate, each of said relatively shallow N-type conductivity regions extending beneath a corresponding one of said first and second phase electrodes and being respectively aligned adjacent one edge thereof but terminating short of the opposite edge of the electrode corresponding thereto;

said substrate under each of said first and second phase electrodes being divided into a barrier region and an adjacent well region, said well region including a respective shallow region of said N-type conductivity therein;

an enhanced relatively deep layer having a dopant impurity of P-type conductivity and of greater concentration than the P-type conductivity dopant impurity in the semiconductor material of said substrate disposed within said substrate at a depth spaced from said first surface and extending through said barrier regions and said well regions beneath said first and second phase electrodes; and

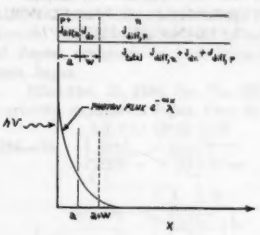
the N-type conductivity dopant impurity of each of said relatively shallow N-type conductivity regions having a Gaussian distribution with a peak lying within 500 A–2000 A from said first surface of said substrate, and the P-type conductivity dopant impurity of said enhanced relatively deep P-type conductivity layer having a Gaussian distribution with a peak lying within 5000 A–15,000 A from said first surface.

4,364,077

P+N GALLIUM PHOSPHIDE PHOTODIODES

Alice M. Chiang, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 9, 1980, Ser. No. 185,471
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **1 Claim**



1. A photodiode detector apparatus with high quantum efficiency comprising in combination:

a semiconductor body of Group III-V compound having a photoelectric-sensitive surface,

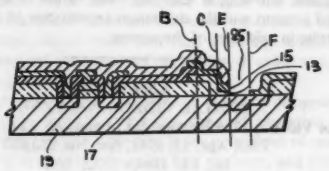
a thin film deposition of a second group III-V compound atop said semiconductor body to form a p-n junction, said p-n junction forms a photodiode being highly responsive to upper-level ultraviolet light radiation, said p-n junction has a shallow junction depth, said photodiode has a quantum efficiency greater than 30% at a wavelength of 0.4 μm, said photodiode is responsive to ultraviolet radiation having a wavelength smaller than 0.4 μm, said photodiode junction is formed by a GaP ion implantation, and said photodiode junction depth equals 0.15 μm.

4,364,078

EDGE BARRIER OF POLYSILICON AND METAL FOR INTEGRATED CIRCUIT CHIPS

Paul W. Smith, San Jose; James J. Freeman, Milpitas; Donald D. Forsythe, Palo Alto; Megha Shyam, Santa Clara; Kenneth K. Yagura, Sunnyvale, and Gunnar Wetlesen, Los Gatos, all of Calif., assignors to Synertek, Santa Clara, Calif.

Continuation of Ser. No. 933,895, Aug. 15, 1978, abandoned, which is a continuation of Ser. No. 768,274, Feb. 14, 1977, abandoned. This application May 16, 1980, Ser. No. 150,439
Int. Cl.³ H01L *29/34*
U.S. Cl. 357—52 **4 Claims**



1. In a semiconductor integrated circuit die construction within which circuits are defined, including a thermal oxide layer immediately over portions of a substrate, inward from scribe line zones where the substrate is exposed, the improvement comprising,

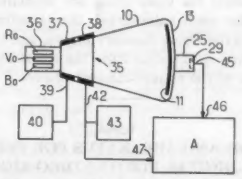
a protective ion barrier forming lateral edges of the die, said edge barrier having a lower layer extending from a substrate surface upwardly, adjacent to scribe line zones where the substrate is exposed, at least as high as the thermal oxide layer disposed upon said substrate and an upper layer immediately covering said lower layer at least in said scribe line zones, said upper and lower ion barrier layers made of different materials, wherein the upper layer of said protective barrier is a metal layer, the lower layer being a layer of polysilicon, each layer resisting ion contamination past the material thereby protecting said die from edgewise ion migration.

4,364,079

PROCESS OF ANALYSIS OF THE CONVERGENCE OF A CATHODE-RAY TUBE WITH THREE GANGED GUNS AND A DEVICE FORMING A PICK-UP ALLOWING IMPLEMENTATION OF THIS PROCESS

Claude Pons, Grotta Ferrata, Italy, assignor to Videocolor (S.A.), France

Filed Mar. 31, 1981, Ser. No. 249,568
Claims priority, application France, Apr. 2, 1980, 80 07412
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—10 **13 Claims**



1. Process for analysis of the convergence of the three beams of a color cathode-ray tube with three ganged guns and shadow mask perforated with holes, preferably oblong, equipped with a deviator having horizontal and vertical deflection coilings, characterized by the fact that, for determining the projection of the convergence gaps between the three beams along at least one reference axis in a deviation direction preferably perpendicular to this reference axis, it consists of

turning on only one of the three guns and applying a slowly variable signal to at least one of the deflection coilings and a scanning signal to at least the other deflection coiling so as to produce on the screen a luminous line moving slowly parallel to said reference axis, of measuring the light intensity through an analysis slit located parallel to the direction of the luminous line formed on the screen at the point where it is wished to determine the convergence characteristics, of fixing the values of the current in said coilings when the light intensity perceived through said slit is maximum, of repeating the same operations for the other two guns, and of calculating said projections of the convergence gaps according to said reference axis, knowing at least the three values of the aforementioned current and the deflection sensitivities of the cathode-ray tube in said area of the screen.

4,364,080

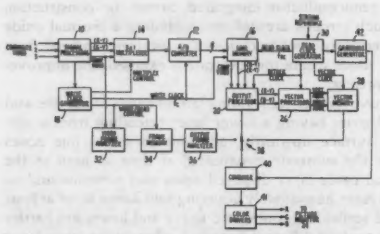
DIGITAL VIDEO ANALYZER

Jovan Vidovic, 1725 Bucknal Rd., Campbell, Calif. 95008

Filed Apr. 13, 1981, Ser. No. 253,667

Int. Cl.³ H04N *9/62, 7/02*

U.S. Cl. 358—10 **20 Claims**



1. An apparatus for analyzing and visually displaying a selectable interval of a waveform on a raster-scanning type display comprising

level analyzer means for simultaneously detecting the presence of a plurality of predetermined signal reference magnitudes within a subinterval of the waveform interval and for generating a binary word representative of the magnitudes detected within the subinterval;

frame memory means for storing the binary word for each waveform subinterval so that a horizontal data word for each reference magnitude can be read from the frame memory means which indicates, with respect to the reference magnitude, in which of the subintervals the reference magnitude was present in the selected waveform interval;

means for reading horizontal data words from said frame memory means for transfer to said raster-scanning display; and

timing means for controlling the formation of the binary word for each subinterval, the transfer of each binary word to the frame memory means, and the reading of the horizontal data words from the frame memory means for transfer to the raster-scanning display.

4,364,081

METHOD AND APPARATUS FOR PROCESSING A DIGITAL COLOR VIDEO SIGNAL

Yoshitaka Hashimoto, Chofu; Norihisa Shirota, Atsugi, and Kaichi Yamamoto, Zama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 16, 1981, Ser. No. 254,851

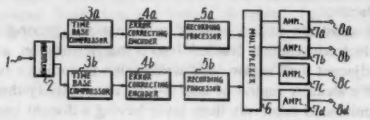
Claims priority, application Japan, Apr. 16, 1980, 55-50887; Apr. 29, 1980, 55-56882

Int. Cl.³ H04N *9/00*

U.S. Cl. 358—13 **31 Claims**

1. A method of processing a digital signal comprised of a plurality of N-bit words which have been code converted from a plurality of M-bit words in accordance with a predetermined mapping function, said method comprising the steps of:

reconverting each of said N-bit words to a respective one of said M-bit words in accordance with said mapping function, with said plurality of reconverted M-bit words forming a data unit for every predetermined number of words thereof;



detecting whether any of said M-bit words contain an error by failing to satisfy the mapping function during said step of reconverting; and

determining that each data unit that includes an M-bit word having an error is erroneous.

4,364,082

PHASE DETECTION CIRCUIT AND AUTOMATIC TINT CONTROL CIRCUIT OF COLOR TELEVISION RECEIVER UTILIZING THE SAME

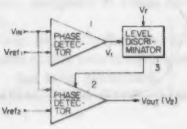
Kenichi Tonomura, Tachikawa, and Kyoichi Takahashi, Kodaira, both of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of, Japan

Filed Feb. 18, 1981, Ser. No. 235,608

Claims priority, application Japan, Mar. 12, 1980, 55-30374

Int. Cl.³ H04N *9/535;* H03D *3/18*

U.S. Cl. 358—28 **4 Claims**



1. An automatic tint control circuit for a color television receiver comprising:

a first phase detector having respective inputs to which a chroma signal and a first reference signal are to be impressed;

a second phase detector having respective inputs to which said chroma signal and a second reference signal are to be impressed;

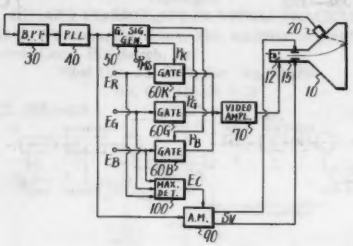
level discriminator means responsive to the output signal of said first phase detector for directly inhibiting the operation of said second phase detector in accordance with the level of said output signal of said first phase detector.

4,364,083

BEAM INDEX TYPE COLOR TELEVISION RECEIVER

Katsuo Isono; Senri Miyaoka, and Kinya Shinkai, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,029
Claims priority, application Japan, Apr. 23, 1979, 54-49948
Int. Cl.[3] H04N 9/24
U.S. Cl. 358—69 7 Claims



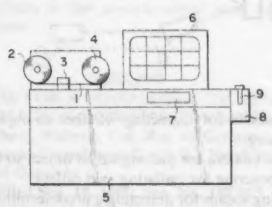
1. In a beam index color television receiver of the type which comprises a beam index type color cathode tube including a screen and an electron gun emitting a cathode beam current which varies with a video input signal and which scans said screen, the latter having an array of color phosphor elements and index elements spaced periodically thereon; timing signal generating means for sensing the scanning by said cathode beam of said index elements and providing a timing signal whose phase depends on the timing of such scanning of said index elements; gating means controlled by said timing signal for sequentially selecting each of three primary color signals in said video input signal and supplying the sequentially selected primary color signals to said electron gun; and velocity modulating means for modulating the beam scanning velocity of said cathode beam; the improvement comprising modulating signal generating means responsive both to the level of said video input signal and to said timing signal to supply to said velocity modulating means a velocity modulating signal that varies with the amplitude of said timing signal.

4,364,084

COLOR CORRECTION MONITORING SYSTEM

Taizo Akimoto, Minami-ashigara, and Yasuo Kawase, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1980, Ser. No. 200,553
Claims priority, application Japan, Oct. 25, 1979, 54-138113
Int. Cl.[3] G03F 3/08
U.S. Cl. 358—76 2 Claims



1. A color film monitoring system for a color printing system comprising in combination:

a film scanning means for scanning the color images on a film and generating three color video signals of red, green and blue,

an A/D conversion means for converting the color video signal to a digital color video signal,

frame memory means for recording the digital color video signals of a plurality of frames of image,

table look-up memory means for image processing the digital color video signal read out from the frame memory means,

a D/A conversion means for converting the image processed digital color video signal into an analog color video signal,

a color video monitor means receiving said analog color video signal and displaying a plurality of frames of image on a cathode ray tube,

an automatic color film analyzer means for obtaining LATD, maximum value and minimum value based on the color video signal from said film scanning means and computing the conditions of correction of color and density using said values,

a computer means for controlling the sequence of operation of the whole system, correcting standard gradation conversion table values according to the conditions of correction from said automatic color film analyzer, and recording the corrected gradation conversion table values in table look-up memories,

a manually operable input means for correcting the gradation conversion table values recorded in said table look-up memories by inputing address of a frame and the amount of correction for the frame of image displayed on said color video monitor, and

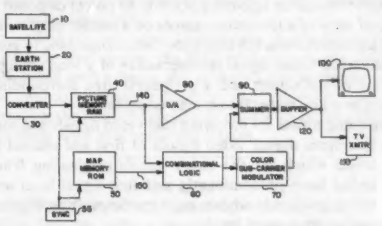
a recording means for recording the automatically obtained conditions of correction and/or the conditions of correction which are manually inputed.

4,364,085

COLORIZED WEATHER SATELLITE CONVERTER

James Dalke, Bellevue, Wash., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Apr. 22, 1980, Ser. No. 142,781
Int. Cl.[3] H04N 9/02, 9/535
U.S. Cl. 358—81 5 Claims



1. Method for presenting, in standard public television format, weather pictures comprising black and white video signals showing cloud cover, the method comprising the steps of

selecting a portion of the video signal for a given geographical area and storing said selected portion in a temporary memory,

storing in a second memory information representing the location of water bodies and land masses within said given geographical area,

simultaneously interrogating both memories,

generating a color sub-carrier which is modulated by the intensity information contained in the video signal stored in temporary memory and the water bodies and land masses location information stored in said second memory, and

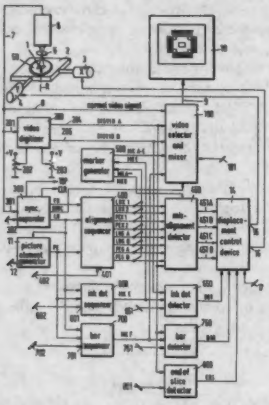
combining the stored black and white video signals and the modulated color sub-carrier thereby to produce a composite picture in standard public television format.

4,364,086

ALIGNMENT AND RECOGNITION APPARATUS

Friedrich Guth, Freising, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Continuation of Ser. No. 948,064, Nov. 29, 1978, abandoned.
This application Jun. 30, 1980, Ser. No. 164,717
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803653
Int. Cl.³ H04N 7/18
U.S. Cl. 358—101 54 Claims



1. Apparatus for generating signals for use in aligning with respect to a known reference position an object disposed in the field of view of a television camera on a carrier displaceable in two axial directions, the television camera operable to generate an electrical video signal representative of a video image of a surface of the object and a peripheral area surrounding the object in a line raster frame scan comprising:

digitizing means for receiving said video signals and forming therefrom digital video signals of first and second signal levels which for the video signals originating from the object have predominantly said first signal level and for the video signals originating from the peripheral area have said second signal level;

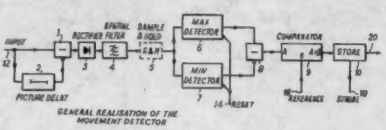
analyzing means for (a) analyzing said digital video signals during a plurality of data window sets which are associated with said axial directions and which correspond to regions of the video image which are in a defined position relative to different edges of the video image of the object when the latter is aligned with respect to the reference position, the data windows of each data window set corresponding to parallel video image regions having predetermined distances from each other in the associated axial direction of displacement of the carrier, and (b) furnishing operating signals characterizing the number of data windows present in each set in uninterrupted sequence from the inside to the outside of the video image of the object during which appearance of said digitized video signals having said first level has occurred, said operating signals providing a measure of magnitude and direction of displacement of said object for use in adjusting said carrier to bring said object into alignment with respect to said reference position.

4,364,087

MOVEMENT DETECTOR FOR TELEVISION SIGNALS

Richard Storey, Sutton, and Alan Roberts, Tadworth, both of England, assignors to British Broadcasting Corporation, London, England

Filed Aug. 1, 1980, Ser. No. 174,426
Claims priority, application United Kingdom, Aug. 1, 1979, 7926778
Int. Cl.³ H04N 7/18
U.S. Cl. 358—105 7 Claims



1. A movement detector for detecting movement in selected picture areas of a video signal, comprising:

an input for receiving an input video signal;

difference signal generating means connected to the input for generating a signal representative of the difference between the input signal on two different field scans;

extreme value determining means for determining for a selected area or areas of the picture maximum and minimum values of the difference signal; and

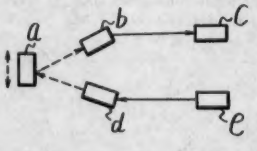
comparing means for comparing the value of said maximum value minus said minimum value with a reference value.

4,364,088

APPARATUS FOR INSPECTING WHETHER AN OBJECT IS GOOD OR BAD

Yutaka Kubota, Odawara, Japan, assignor to Stanley Electric Co., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,139
Claims priority, application Japan, Dec. 12, 1979, 54-161149
Int. Cl.³ H04M 7/18
U.S. Cl. 358—106 4 Claims



1. An apparatus for inspecting whether an object is good or bad comprising:

(a) a video camera for picking up an object to be inspected;

(b) a stroboscope for radiating said object;

(c) detecting means for detecting a predetermined inspection position of said object and producing a position signal when said object arrives at said predetermined inspection position;

(d) means for receiving the position signal from said position detecting means and for producing a signal to flash said stroboscope;

(e) means for receiving an output from said video camera and for inspecting whether said object is good or bad;

(f) means for separating a synchronizing signal from a composite video signal derived from said video camera; and

(g) means for making the electron beam of said video camera OFF at the latest before receiving the position signal from said position detecting means and then making the electron beam ON when receiving the synchronizing signal after said position signal and starting the inspecting operation of said inspecting means.

4,364,089

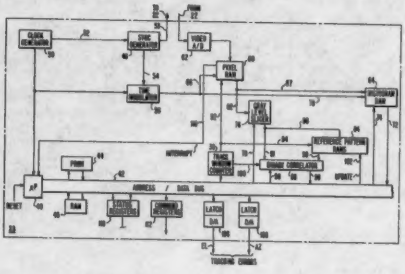
BINARY CORRELATION VIDEO TRACKER

Martin G. Woolfson, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1979, Ser. No. 89,688

Int. Cl.³ H04N 7/18

U.S. Cl. 358—125 **12 Claims**



1. A video preprocessor for forming a binary pattern of gray level values for the picture elements (pixels) in a predetermined array of a frame of video gray level information generated from an electrical sensor, said preprocessor comprising:

means for distributing the pixels of one selected pixel array within said predetermined pixel array of said video frame into a first gray level histogram based on a predetermined set of gray level values;

means for distributing the pixels of at least one other selected pixel array within said predetermined pixel array of said video frame into a second gray level histogram based on said predetermined set of gray level values;

means for selecting at least one gray level value of said predetermined set based on a discriminant function of said first and second gray level histogram distributions; and

means for assigning one of two predetermined values to those pixels in said predetermined pixel array of said video frame which have a selected gray level value and for assigning the other of said two predetermined values to those pixels in said predetermined pixel array of said video frame which have an unselected gray level value, whereby a binary pattern of gray level values are formed for the pixels in the predetermined pixel array of said video frame.

4,364,090

METHOD FOR A COMPATIBLE INCREASE IN RESOLUTION IN TELEVISION SYSTEMS

Broder Wendland, Waltrop, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,913

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938349

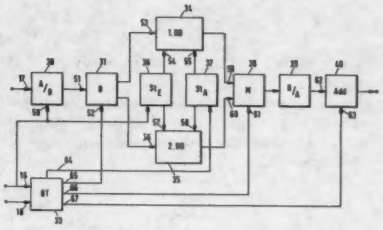
Int. Cl.³ H04N 5/02

U.S. Cl. 358—140 **5 Claims**

1. A method for effecting a compatible increase in resolution in a television signal transmission system having a transmitting end and a receiving end and in which the luminance signal is scanned line by line, with line interlacing, to divide each picture frame into two fields, and the signal is limited at the transmitting end by a lowpass filter, the transmitting and receiving ends being coupled together by a transmission channel having an upper cutoff frequency defined by a Nyquist edge, said method comprising: at the transmitting end,

sampling elements of successive lines of each field, with the sampled elements of one field being offset in the line scanning direction from those of the immediately succeeding field, the sampling of successive lines being controlled by a sampling clock pulse train at a frequency which is in synchronism with the line scanning frequency of the system and which is twice as high as the frequency of the Nyquist edge of the transmission channel; and, at the receiving end,

sampling the signal received from the transmitting end in synchronism with the sampling clock pulse train at the transmitting end and delayed by the delay time of the transmission channel;



separately storing the sampled signals associated with the two fields of each picture frame in accordance with the time of their occurrence;

alternatingly reading out from storage and combining the sampled signals of immediately adjacent lines of a complete picture frame at twice the rate at which they are stored during said step of storing to provide signals of successive lines of a complete frame at twice the line frequency and at the frame frequency of the scanning at the transmitting end;

after reading out the signals of each line, again storing those signals so that during the time of storing of the signals associated with a frame, the stored signals associated with the two corresponding fields are read out twice; and

converting the read-out signals to analog form and combining them with synchronizing signals.

4,364,091

EQUALIZING PULSE REMOVAL CIRCUIT

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 18, 1981, Ser. No. 235,720

Int. Cl.³ H04N 5/04

U.S. Cl. 358—148 **2 Claims**

1. An equalizing pulse removal circuit comprising:

a first input terminal to which clock pulses with a higher frequency than the horizontal frequency are applied;

a frequency dividing circuit which frequency-divides the clock pulses applied to said input terminal into a signal with a frequency higher than $\frac{1}{2}$H but lower than 1H;

a second input terminal to which a composite sync signal separated from a video signal is applied;

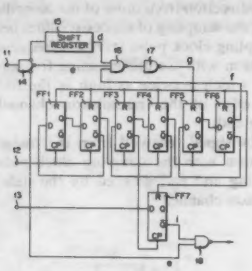
a delay circuit for delaying said composite sync signal applied to said second input terminal;

an inverting circuit for inverting said composite sync signal applied to said second input terminal;

a reset circuit which forms pulses synchronized with horizontal synchronized pulse included in said composite sync

signal by using the output signals from said frequency dividing circuit, said delay circuit and said inverting circuit and for resetting said frequency dividing circuit;

a gate pulse forming circuit for forming gate pulses with a fixed pulse width which is longer than said horizontal synchronizing pulse width but shorter than ½H at the



timing of the resetting of said frequency dividing circuit; and

a gate circuit for allowing the composite sync signal applied to said second input terminal to pass therethrough only during a period that said gate pulse forming circuit produces gate pulses.

4,364,092

TELEVISION SIGNAL GHOST DETECTOR

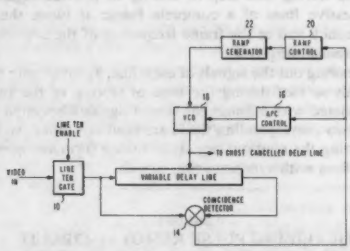
David D. Holmes, Chesterfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,595

Claims priority, application United Kingdom, Aug. 14, 1980, 8026515

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **5 Claims**



1. In a television receiver, including a source of video signals which may be contaminated with a ghost signal, said video signal including a component subject to use as a training signal, a television ghost detector system comprising:

means responsive to said video signals and having an output for passing a portion of said video signals which includes said training signal, and a ghost of said training signal when a ghost signal is present;

a variable delay line having an input coupled to receive said portion of said video signals and an output, and a control signal input, and responsive to a control signal for controlling the delay imparted to said video signal portion by said delay line over a range of delay times;

a coincidence detector having a first input coupled to the input of said delay line and a second input coupled to the output of said delay line, and an output at which a coincidence signal is produced in response to the application of said training signal to said second input in time coincidence with the application of its ghost signal to said first input; and

means having an input coupled to the output of said coincidence detector and an output coupled to said control signal input of said delay line, for providing a control signal to said delay line so as to establish its delay at a delay within said range of delay times.

4,364,093

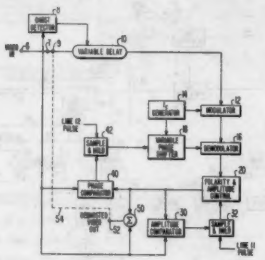
TELEVISION GHOST CANCELLATION SYSTEM WITH PHASE-CONTROLLED REMODULATION

David D. Holmes, Chesterfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,179

Int. Cl.³ H04N *5/31*

U.S. Cl. 358—167 **9 Claims**



1. In a television receiver, including a source of desired video signals, said signals being subject to contamination by ghost signals, and a television signal ghost detector responsive to said video signals for determining the time interval between the occurrence of said video signals and their corresponding ghost signal components when a ghost signal is present; a television signal ghost cancellation system for producing processed video signals comprising:

a variable delay line having an input coupled to receive one of said desired or processed video signals, and an output, and coupled to said ghost detector for delaying said video signals by a time substantially equal to the time interval between the occurrence of said desired video signals and their corresponding ghost signal components when a ghost signal is present;

a source of modulating carrier signals;

a modulator having a first input coupled to the output of said delay line for receiving said delayed video signals, and a second input coupled to said source of modulating carrier signals, and an output at which modulated delayed video signals are developed;

a variable phase shifter having a first input coupled to receive said modulating carrier signals, a control input, and an output;

a demodulator having a first input coupled to the output of said modulator, a second input coupled to the output of said variable phase shifter, and an output at which demodulated delayed video signals are developed;

means coupled to the output of said demodulator for developing pseudo-ghost signal components which are substantially equal in amplitude to, and aligned in time with said ghost signal components of said video signals from said source;

phase comparison means having a first input coupled to receive said pseudo-ghost signal components, a second input coupled to receive said video signals, and an output coupled to said control input of said variable phase shifter, for developing a control signal representative of the phase relationship between said ghost signal components and said pseudo-ghost signal components; and

means having a first input coupled to receive said pseudo-

ghost signal components, and a second input coupled to receive said video signals from said source, for combining said signals to produce said processed video signals,

wherein said processed video signals are substantially free of ghost components.

4,364,094

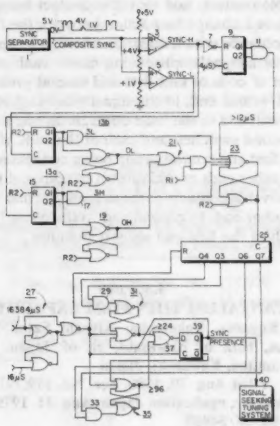
DIGITAL ARRANGEMENT FOR DETECTING A CORRECT TELEVISION SYNCHRONIZATION SIGNAL OUTPUT USEFUL IN A SIGNAL SEEKING TUNING SYSTEM

Michael P. French, and Juri Tults, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,449

Int. Cl.[3] H04N 5/50, 7/02

U.S. Cl. 358—193.1 5 Claims



1. A detector for determining the correctness of a television synchronization signal including synchronization pulses for use in a signal seeking tuning system, comprising:

first threshold comparator means for generating first output pulses when said synchronization signal has an amplitude component below a first predetermined threshold below the maximum excursion of said synchronization pulses;

second threshold comparator means for generating second output pulses when said synchronization signal has an amplitude component above a second predetermined threshold above the minimum excursion of said synchronization pulses;

first counter means for counting the number of said first output pulses during a measurement interval;

second counter means for counting the number of said second output pulses during said measurement interval;

first count comparator means for determining when said count counted by said first counter means is within predetermined count limits;

second count comparator means for determining when said count counted by said second counter means is within said predetermined count limits; and

error determining means for generating an error signal when one of said predetermined count limits is exceeded.

4,364,095

APPARATUS FOR PREVENTING OR ALTERNATIVELY RESTRICTING THE DISCHARGE OF ANIONS AND X-RAYS FROM THE FRONT SIDE OF CATHODE RAY TUBES

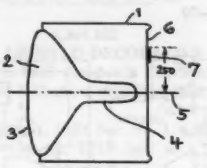
Helmut R. Roeder, Klosterstrasse 2, 6474 Ortenberg-Selters, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,471

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949661

Int. Cl.[3] H04N 5/65

U.S. Cl. 358—245 8 Claims



1. An apparatus for preventing or alternatively decreasing the discharge of anions and x-rays at the front screen of cathode ray tubes, the tubes including a rear wall, comprising:

a disc system affixed to the rear wall of the cathode ray tube adjacent to the longitudinal axis of the cathode ray tube outside of the cathode, whereby said disc system acts as an eddy current brake.

4,364,096

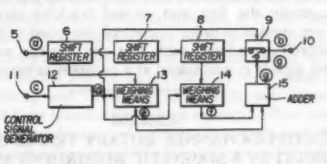
APPARATUS FOR REPRODUCING PCM MAGNETIC RECORDING TAPE

Minoru Ozaki, and Ken Onishi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 35,404, May 2, 1979. This application Jul. 14, 1980, Ser. No. 168,553

Int. Cl.[3] G11B 27/02, 5/00

U.S. Cl. 360—13 6 Claims



1. An apparatus for reproducing a PCM magnetic recording tape, comprising:

a detecting means for detecting an edited part from PCM signal rows reproduced from said magnetic recording tape;

a delay means for delaying said PCM signal rows in sequence during a specific time;

a first weighing means for weighing to gradually increase the backward signal recorded behind said edited point under the control of a signal detected by the detecting means;

a second weighing means under the control of said signal from said detecting means for weighing the output from said delay means to gradually decrease the forward signal recorded in front of said edited point;

an adder for summing output signals from said first weighing means and said second weighing means;

a switch under the control of said signal from said detecting means for switching to obtain a reproduced output from said adder during a specific term and to reproduce and to

output the output of said delay means during the other term.

4,364,097

TAPE SPEED CONTROL DEVICE

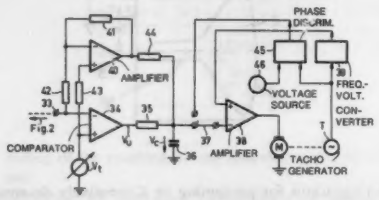
Jacob De Boer; Hendrik J. Sanderson, both of Eindhoven, Netherlands, and Friedrich Sommer, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,643

Claims priority, application Netherlands, Jun. 22, 1979, 7904885

Int. Cl.³ G11B *15/18, 21/10*

U.S. Cl. 360—70 4 Claims



1. An apparatus for reading information from two recording tracks which extend substantially parallel to each other and make an angle with the longitudinal axis of a recording medium in the form of a tape, comprising at least a first and a second head for in turn sequentially reading consecutive recording tracks, at least a first and a second transducer for adjusting the position of the first and the second head respectively in a direction transverse to the direction of the recording tracks, a tracking signal generator for alternately generating at least a first and a second tracking signal respectively, which is a measure of the deviation of the first or the second head relative to the center of the track to be followed by said head, an energizing circuit for energizing the first and the second transducer as a function of the first and the second tracking signal respectively, so as to center the first and the second head relative to the track to be followed by said head, and a tape speed control circuit, characterized in that the tape speed control circuit comprises a first input to which alternately and consecutively the first and second tracking signals which occur are applied in order to control the speed of transport of the recording medium, such that the average value of the tracking signals is maintained at a constant reference value.

4,364,098

MULTIPLE-CHANNEL ROTARY TRANSFORMER CIRCUIT IN A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

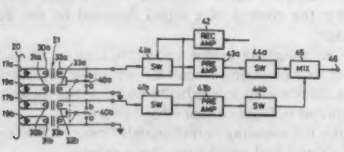
Akira Hirota, Chigasaki, and Masaharu Tsunekawa, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 11, 1980, Ser. No. 129,336

Claims priority, application Japan, Mar. 14, 1979, 54/31697[U]

Int. Cl.³ G11B *15/14*

U.S. Cl. 360—108 2 Claims



1. A rotary transformer circuit in a magnetic recording and/or reproducing apparatus including a rotary structure with first and second sets of rotary magnetic heads which are used alternatively during either a signal recording or a reproducing mode, each head set comprising at least two rotary magnetic heads, and including a signal recording and reproducing circuit associated with the rotary magnetic heads, said rotary transformer circuit comprising:

rotary transformer means comprising a rotor having first and second groups of coils disposed thereon in a concentric circular arrangement, each group of said coils including two coils which are paired with a corresponding two coils of the other group of coils, each of said paired coils constituting a separate set of coils, said coils being respectively connected to the individual rotary magnetic heads of the first and second sets of rotary magnetic heads, and said coils and heads rotating together with the rotation of said rotary structure, each of the first group of said coils and each of the second group of said coils adjoining each other, and a stator having first and second groups of coils disposed in a concentric circular arrangement to respectively confront corresponding coils of the rotor, thereby to inductively transfer signals between the coils of the rotor and the coils of the stator; and

switching means comprising first and second switches, each of said switches comprising two fixed contacts and a movable contact, said movable contact being operable to switch in a changeover action between the fixed contacts in accordance with a selection of either a signal recording mode or a signal reproducing mode, each of the coils of one set of coils of said first and second group being connected, at one end, to the signal recording and reproducing circuit and to the fixed contacts on one side of the first and second switches, and each of the coils of the other set of the first and second group being connected, at one end, to the other ends of said one set of coils and to the respective movable contacts of the first and second switches, and at its other end, to ground and to the other fixed contacts of each of the first and second switches.

4,364,099

TANTALUM THIN FILM CAPACITOR

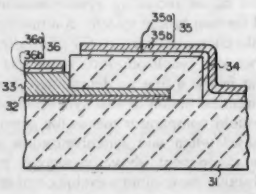
Masataka Koyama, Yokohama; Kiyoshi Satoh, and Minoru Terashima, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1980, Ser. No. 179,791

Claims priority, application Japan, Aug. 31, 1979, 54/111158; Apr. 25, 1980, 55/54985

Int. Cl.³ H01G *4/10*

U.S. Cl. 361—305 8 Claims



1. A tantalum thin film capacitor comprising:

a highly nitrogen-doped tantalum film, having a nitrogen concentration of from 14 to 30 atomic %;

a lower electrode formed on the highly nitrogen-doped tantalum film and comprising an α-tantalum thin film, said thin film having a nitrogen concentration of from 6 to 15 atomic %, but lower than the nitrogen concentration of the highly nitrogen-doped tantalum film;

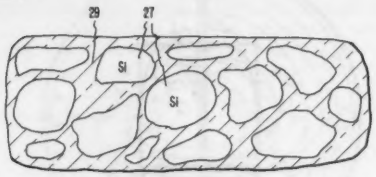
a dielectric layer formed on the lower electrode and comprising a chemical conversion film of the α-tantalum; and

an upper electrode formed on the dielectric layer.

4,364,100
MULTI-LAYERED METALLIZED SILICON MATRIX SUBSTRATE

Harold D. Edmonds, Hopewell Junction, and Gary Markovits, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,216
Int. Cl.³ H05K *1/03*
U.S. Cl. 361—395 5 Claims



1. A substrate having a coefficient of expansion in the range of 2.5×10^{-6} to 4.1×10^{-6} °K^{-1} comprising

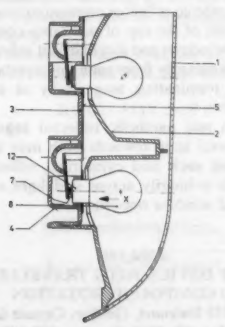
a matrix of sintered silicon particles of a size less than 5 microns, each particle joined and surrounded by an electrically insulating layer of a silicon compound selected from the group consisting of silicon dioxide, silicon nitride, and mixtures thereof, said insulating layer of a thickness in the range of 0.1 to 1 micron,

said substrate including conductor lines formed therein, and having electrical connection pads on a surface thereof.

4,364,101
VEHICLE LAMP WITH A LAMP CARRIER MADE FROM A SHEET METAL BLANK

Hans P. Brockmeyer, Lippstadt, Fed. Rep. of Germany, assignor to Westfälische Metall Industrie KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,770
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935650
Int. Cl.³ B60Q *1/26;* F21M *11/00*
U.S. Cl. 362—80 11 Claims



1. Vehicle lamp with a lamp carrier, comprising: a sheet metal blank having a plurality of openings; light bulbs accommodated in said openings and electrically conductively seated with sleeve-shaped socket contacts; electrical conductor strips stamped from said lamp carrier sheet metal blank and serving as electrical conductors for the individual light bulbs, said electrical conductor strips stamped from said lamp carrier remaining at their original position within said lamp carrier after having been stamped out from said lamp carrier, said light bulbs having center poles, said stamped-out conductor strips having free ends engaging springly the center pole of a respective light bulb, said conductor strip having a respective end portion contacting the center pole of the light bulb, said end portion being stamped out from a region of the lamp carrier substantially remote from an opening accommodating a light bulb socket, said end portion being brought by a deformation of the conductor strip from its original position into a central position underneath a central axis of said opening accommodating said light bulb, said electrical conductor strips being integral and one piece with said lamp carrier before being stamped out from said lamp carrier, said conductor strips after being stamped out having when operative an electrical polarity which is opposite to the electrical polarity of the lamp carrier.

4,364,102
INTERNALLY LIGHTED DECORATIVE DISPLAY

Vaughn P. Huppert, 9445 Goodwick Ct., San Diego, Calif. 92123, and Richard J. Castoro, 1940 Park Dale La., Encinitas, Calif. 92024

Filed Aug. 1, 1980, Ser. No. 174,588
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—123 12 Claims

1. A decorative display which is able to emit light from the exterior thereof, comprising; a display body having an apertured exterior surface and a hollow interior defined by an internal surface, an elongated electric illumination means contained and positioned within said interior, at least a portion of the internal surface of said display body being covered with a light-reflective layer which is in communication with said illumination means and the light reflective layer being capable of transmitting and reflecting light from said illumination means, and light transmitting means extending from said exterior surface to said interior to receive light from said illumination means and reflected light from said layer and transmit said light from apertures in said exterior surface.

4,364,103
BATTERY CASE FOR AN ELECTRICALLY OPERATED DEVICE

Thad L. Harshbarger, 4991 Northlawn Dr., Murrysville, Pa. 15668

Filed Aug. 11, 1980, Ser. No. 176,647
Int. Cl.³ F21L *9/00*
U.S. Cl. 362—200 11 Claims

1. A battery case for an electrically operated device comprising,

a battery housing having a pair of side walls, a top wall, a bottom wall, and at least one open end portion,

said battery housing forming a low profile battery compartment of a preselected configuration as defined by said side walls and said top and bottom walls,

said battery compartment being accessible through said one open end portion,

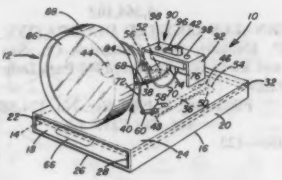
an expended cassette film pack containing a multicelled

planar battery of the type employed in self-developing cameras as a power source positioned in said battery compartment,

said expended cassette film pack including a housing having terminal ports for exposing electrical leads of said multicelled planar battery,

a pair of electrically conductive terminal strips secured to said top wall,

each of said terminal strips having a first contact end portion selectively positioned within said battery compartment and a second contact end portion projecting from said top wall externally of said battery compartment,



said terminal strips being spring biased to normally urge said first contact end portions downwardly from said top wall to securely make electrical contact with said multicelled planar battery and to securely retain said expended cassette film pack in an operative position within said battery compartment,

a switch mounted on the upper surface of said wall,

conductor means for electrically connecting said terminal strips to an electrically operated device in a circuit, and

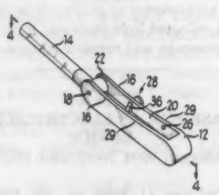
said conductor means being connected to said switch with said switch being operable between a first position and a second position to open and close said circuit.

4,364,104

NOVELTY LIGHT

Edward T. Holahan, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 198,722
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—223 **10 Claims**



1. A toy light, comprising:

a housing;

an extensible element mounted for rotation from a position within said housing to a position extending away from said housing;

means for biasing said element to its outwardly extending position;

means for releasably retaining said element in a position within said housing; and

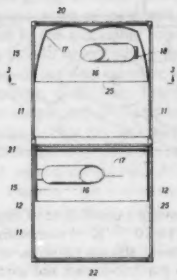
means for internally illuminating said element when it is in its outwardly extending position.

4,364,105

STACKED FIXTURES WITH ANGULARLY POSITIONED LAMPS AND DOWNWARDLY LIGHT-DIRECTING REFLECTORS

Albert C. McNamara, Jr., San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Continuation of Ser. No. 35,438, May 3, 1979, abandoned. This application Apr. 1, 1981, Ser. No. 249,951
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—224 **7 Claims**



1. A light fixture for bidirectional long range illumination of ground surfaces without significant light-dark boundaries and with reduced shadow effects comprising:

(a) a housing adapted to be mounted in an upright position above the ground surface and said housing having parallel opposite placed vertical windows in a rectangular lamp compartment;

(b) an electrical socket in said compartment to receive the electrical end of a lamp having an elongated arc, and said lamp placed substantially horizontally with its axis residing diagonally across said lamp compartment between said windows;

(c) reflector means carried on the inner side at the top of said lamp compartment;

(d) said reflector means comprising side by side reflector halves symmetrically positioned relative to a center line of the top of said lamp compartment, each reflector half including a parabolic reflector segment extending laterally from the middle of the top of said lamp compartment to adjacent said windows and a cylindrical reflector segment extending downwardly from each said parabolic reflector segment and terminating tangentially at said window adjacent thereto,

whereby each said parabolic reflector segment reflects light from said lamp towards both near and opposite windows and each said cylindrical reflector segment reflects light primarily across said light compartment through said window opposite to it.

4,364,106

LIGHT DISPLAY DEVICE WITH TRAVELLING BALLS AND COMPOUND ROTATION

Anthony C. Lam, 371 Dalcourt, Quebec, Canada (J7V 6G5)

Filed Jan. 29, 1981, Ser. No. 229,420
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—272 **9 Claims**

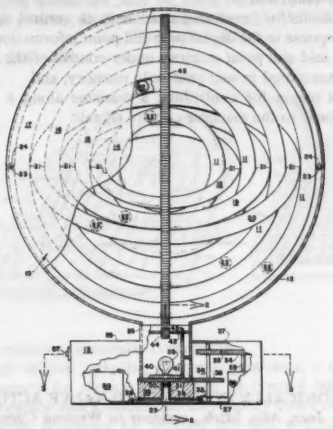
1. A display device comprising:

a. a rigid assembly of toroidally shaped hollow tubes which confine balls adapted for continuous travel within said tubes, said assembly having a plane of symmetry perpendicular to said tubes,

b. a pair of pivot means associated in diametric opposition with the outermost tube of said assembly and adapted to permit rotation of said assembly about a first axis perpendicular to said plane of symmetry,

c. housing means substantially centered within said plane of symmetry,

d. support means associated with said housing means in a manner permitting rotation of said support means about a second axis within said plane of symmetry and perpendicular to said first axis, said support means engaging said pivot means.



e. energizing means disposed within said housing means,

f. motion coupling means which, when activated by said energizing means, rotate said assembly about said first and second axes simultaneously, and

g. a light source associated with said housing means and adapted to illuminate said tubes substantially uniformly with respect to said second axis.

4,364,107

METHOD AND DEVICE FOR USING MASS-PRODUCED LIGHT-EMITTING DIODES AT A PREDETERMINED LUMINANCE

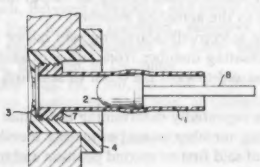
Hanne-Lore Wieczorek; Adolf Triller, both of Munich, and Helmut Gassenhuber, Söcking, all of Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,948

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1979, 2930405

Int. Cl.³ F21V *3/00*

U.S. Cl. 362—285 **9 Claims**



1. Method of using mass-produced light-emitting diodes of a predetermined luminance in instruments requiring a precise luminance value comprising the steps of disposing a light-emitting diode (LED) in a lengthwise adjustable manner within a sleeve, closing said sleeve with a light diffusing disc at an end thereof from which the light from the LED is intended to emerge, and displacing the LED, within the sleeve in such manner that a precisely defined luminance appears at the diffusing disc.

4,364,108

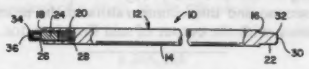
LUMINAIRE COVER LOCKING APPARATUS

William J. Rapp, Hayward, Calif., assignor to Gardco Manufacturing, Inc., San Leandro, Calif.

Filed Jan. 12, 1981, Ser. No. 224,096

Int. Cl.³ F21V *17/00, 29/00*

U.S. Cl. 362—374 **4 Claims**



1. In a luminaire including a housing having an opening and a cover for said opening, said cover including a frame having a pair of end members, a pair of side members extending between said pair of end members, a translucent panel carried by said frame, one end of said frame being hinged to said housing at one end of said opening, and a pair of pins each spring biased to extend longitudinally outward from a different one of said pair of side members at the other end of said frame, said housing having means for receiving said pins at said opening, each of said pair of pins carrying a clip extending outwardly of the face of said frame for manual engagement to move said clips toward each other and retract said pins into said frame against said spring bias, the improvement comprising coaxial channel means in said clips, an elongated rigid member, said elongated rigid member having a reduced portion at one end thereof dimensioned to be received in said channel means in said clips, said elongated rigid member being dimensioned to extend between said clips when said pins project outwardly from said side members and said reduced portion at one end thereof is received in said channel means in one of said clips, said elongated rigid member having a bore at the other end thereof, and rigid finger means retractably received in said bore of said elongated rigid member, said finger means being dimensioned to be received in said channel means of said clips.

4,364,109

CONTROL DEVICE OF INVERTERS

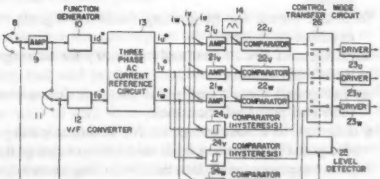
Chihiro Okado, Fuchu, and Isami Ugai, Kokubunji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 10, 1981, Ser. No. 233,052

Claims priority, application Japan, Feb. 19, 1980, 55/18514

Int. Cl.³ H02M *1/12*

U.S. Cl. 363—41 **5 Claims**



1. An inverter control device including at least one current minor loop and a circuit for controlling the inverter in a pulse-width modulating mode, said device further comprising:

a first detector for detecting the operating frequency of the inverter;

a second detector for detecting an actual current delivered from said inverter;

a circuit for producing an AC current reference signal;

a first comparator for comparing the current reference signal with the output of said second detector;

a second comparator for comparing the current reference

signal with the output of said second detector and delivering an output in accordance with a hysteresis characteristic;

a waveform generator for delivering a signal of a triangular waveform;

a third comparator for comparing the output of said first comparator with said signal of the triangular waveform; and

switching means for transferring either one of the outputs of said second and third comparators to the inverter in accordance with the output of said first detector.

4,364,110

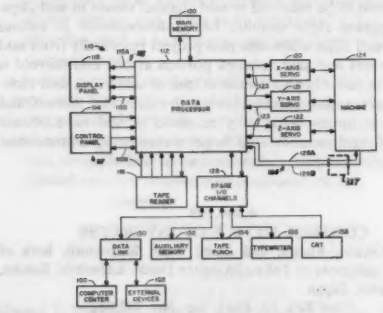
COMPUTERIZED MACHINE CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, abandoned, Ser. No. 134,958, Apr. 19, 1971, Ser. No. 135,040, Apr. 19, 1971, Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, Ser. No. 230,872, Mar. 1, 1972, Ser. No. 232,459, Mar. 7, 1972, Ser. No. 246,867, Apr. 24, 1972, Pat. No. 4,310,878, Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, Ser. No. 291,394, Sep. 22, 1972, Ser. No. 302,771, Nov. 1, 1972, Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,016,540, and Ser. No. 339,817, Mar. 9, 1973, Pat. No. 4,034,276. This application Jun. 5, 1974, Ser. No. 476,743

Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—107 38 Claims



1. A machine control system comprising:

an operator control panel for generating operator command signals;

a memory CRT display for storing path information and for displaying path information in response to path display signals;

feedback means for generating feedback signals related to machine operations;

an integrated circuit read only memory for storing a plurality of instructions;

an integrated circuit end point memory for storing digital path end point information;

a data link to a host computer for communicating the path end point information from said host computer to said end point memory, said data link including means for storing the path end point information communicated from said host computer in said end point memory;

a digital data processor for processing the digital path end point information stored in said end point memory under control of the instructions stored in said read only memory, said digital data processor including

(a) means for processing the digital path end point information stored in said end point memory in response to the operator command signals from said operator control panel under control of the instructions stored in said read only memory,

(b) feedback processing means for processing the digital path end point information stored in said end point memory in response to the feedback signals from said feedback means under control of the instructions stored in said read only memory,

(c) means for generating the path display signals to said memory CRT display in response to the digital path end point information stored in said end point memory under control of the instructions stored in said read only memory, and

(d) means for generating machine path control signals in response to the digital path end point information stored in said end point memory under control of the instructions stored in said read only memory; and

control means for controlling a machine along a path in response to the machine control signals.

4,364,111

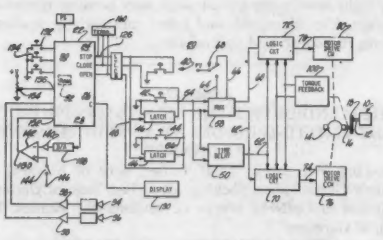
ELECTRONICALLY CONTROLLED VALVE ACTUATOR

Armin E. Jocz, Ada, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed May 20, 1980, Ser. No. 151,666

Int. Cl.[3] G05B *11/32;* F16K *31/04*

U.S. Cl. 364—175 10 Claims



1. For use in conjunction with a valve having an actuating member movable between a first position in which said valve is closed and a second position in which said valve is open, a valve actuator comprising:

reversible motor means having an output mechanically connected to the actuating member,

means for selectively activating said motor means to move said actuating member from either of said first or second position and toward the other of said first or second position,

means for repeatedly determining the actual position of said actuating member as said actuating member moves from either of said first or second position and toward the other of said first or second position,

means responsive to said determining means for automatically deactivating said motor means when said actuating member is at said other of said first or second position, and

wherein said motor activating and deactivating means further comprises electrical circuit means, memory means accessible to said circuit means, said circuit means having means for storing upon operator command the output from said position determining means as values in said memory means corresponding to said first and second positions for said actuating member.

4,364,112
MINIATURE COMPUTER WITH SEPARATE HAND-HELD CONTROLLER

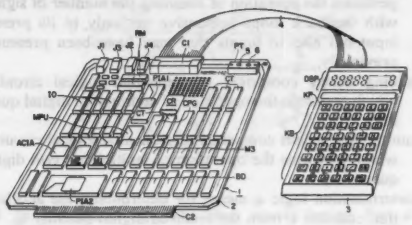
Toru Onodera, Kodaira; Akira Ohsawa, Higashimurayama; Hideki Nishino, Hino, and Masao Watari, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 898,996, Apr. 21, 1978, Pat. No. 4,253,143. This application May 14, 1980, Ser. No. 149,581

Claims priority, application Japan, Apr. 25, 1977, 52-46845

Int. Cl.³ G06F *3/023*

U.S. Cl. 364—200 **6 Claims**



1. A miniature computer comprising

a main section including a central processor, a read only memory for storing a program to control said central processor, and a random access memory connected to said central processor for reading out and writing in data under control of said central processor, said central processor, said read only memory and said random access memory being interconnected by a common bus and being mounted together in a compact housing; and

a hand-held control device mechanically separated from and electrically connected by cable means to said main section, said control device including a controlling keyboard for providing manual input command signals to said main section and display means for displaying said manual input command signals, said controlling keybord having keys corresponding to the numerals of 0 to 9 and the alpha characters of A to Z for inputting data in the form of symbolic language command signals according to an assembler program; wherein said read only memory stores an assembler program for converting said symbolic language command signals to corresponding machine language control signals; and wherein said display means includes a segment driver circuit for displaying said symbolic language data inputted via said keys.

4,364,113
CRACK DEVELOPMENT MEASURING EQUIPMENT

Peter Sengebusch, Bergisch Gladbach, and Horst Nowack, Wetter, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,519

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934038

Int. Cl.³ H04N *7/18*

U.S. Cl. 364—507 **17 Claims**

1. Crack development measuring equipment for use in conjunction with a loading device in which a test piece can be clamped, and having an optical measuring tool trained on the test piece, said equipment comprising:

a television camera cooperating with said optical measuring tool,

control means coupled to said television camera and to said loading device, for causing said loading device to load said test piece in periodic intervals, and for causing said television camera to produce a television image only between such intervals of loading,

a discriminator, connected to said camera, for converting the image elements of each television image into binary pulses,

a memory, connected to said discriminator, for temporarily storing the binary pulses of each television image, and

a digital comparator connected to said memory and to said discriminator to compare the contents of said memory with the binary pulses of a consecutive television image, the output of said comparator being indicative of the development of a crack in the test piece.

4,364,114
METHOD AND APPARATUS FOR DETERMINING THE ACOUSTIC VELOCITY OF A WORKPIECE

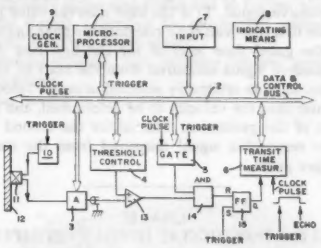
Peter Renzel, Düren, and Klaus Kroesen, Bonn, both of Fed. Rep. of Germany, assignors to Krautkrämer-Branson Incorporated, Stratford, Conn.

Filed Nov. 10, 1980, Ser. No. 205,302

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009574

Int. Cl.³ G01N *29/00*

U.S. Cl. 364—565 **5 Claims**



1. The method for determining the acoustic velocity of a workpiece of known thickness by measuring the transit time of a first and of a second rear wall echo signal by utilizing an ultrasonic test instrument which includes an ultrasonic transmitter for providing an ultrasonic search pulse, a receiver circuit having adjustable amplifying means for processing received echo signals, an adjustable gate circuit for providing a gated time interval during which an echo signal is registered by said receiver circuit, and a threshold voltage means for evaluating the amplitude of an echo signal registered during said gated time interval, the steps comprising:

providing a trigger pulse to said ultrasonic transmitter which responsive to the receipt of said trigger pulse produces an electrical transmit pulse;

applying said transmit pulse to a transducer probe coupled to a workpiece for causing an ultrasonic search signal to be transmitted into the workpiece responsive to said transmit pulse, and said probe subsequently receiving consecutive echo signals arising from said search pulse intercepting the rear wall of said workpiece and then being reflected sequentially at the front wall and rear wall of the workpiece;

providing echo responsive electrical signals from said probe to said receiver circuit and adjusting said gate circuit to cause the first rear wall echo responsive signal following said transmit pulse to be registered within a gated time interval be setting the start of said gate circuit in accordance with $t_{BA}=S_{MAT}/C_0$;

setting said amplifying means to a predetermined reference gain level and changing such setting to cause the amplitude of said first rear wall echo responsive signal to exceed within said gated interval a predetermined threshold amplitude of said threshold voltage means;

measuring the time interval between the start of the trigger pulse and the time at which said first rear wall responsive echo signal exceeds said predetermined threshold amplitude and storing such time interval value;

setting said amplifying means to said predetermined reference gain level;

adjusting said gate circuit to cause the second rear wall echo responsive signal to be registered within a gated time interval by setting the start of the gate circuit in accordance with $t'_{BA}=t_{BA}+T_1$;

changing the setting of said amplifying means to cause the amplitude of said second rear wall echo responsive signal to exceed said predetermined threshold amplitude of said threshold means;

measuring the time interval between the start of the trigger pulse and the time at which said second rear wall echo responsive signal exceeds said predetermined threshold amplitude, and

calculating the acoustic velocity of the workpiece from the respective time interval values using the formula:

$$C_M=(2\cdot S_{MAT})/(T_2-T_1)$$

wherein C_M is the acoustic velocity of the workpiece, S_{MAT} is the known thickness of the workpiece, T_2 is the time interval value pertaining to the second rear wall echo responsive signal, T_1 is the time interval value pertaining to the first rear wall echo responsive signal, t_{BA} is the start of the gated time interval for the first rear wall echo responsive signal measured from the start of the trigger pulse, C_o is an arbitrarily selected acoustic velocity value greater than the velocity to be determined, and t'_{BA} is the start of the gated time interval for the second rear wall echo responsive signal measured from the start of the trigger pulse.

4,364,115

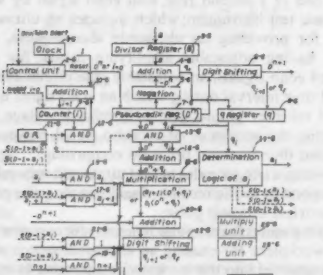
APPARATUS FOR DIGITAL DIVISION COMPUTATION

Hitohisa Asai, 892 Catalina Dr., Newport News, Va. 23602

Continuation-in-part of Ser. No. 816,595, Jul. 18, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,269

Int. Cl.³ G06F 7/52

U.S. Cl. 364—765 **10 Claims**



SOLID LINE AND DOTTED LINE INDICATE DATA TRANSFERRING PATH AND CONTROL PATH, RESPECTIVELY, AND THE PARENTHESES IN EACH REGISTER INDICATE THE CONTENT OF THE REGISTER.

1. Apparatus for digital division computation for producing a quotient by performing successive multiplication operations comprising:

control means comprised of sequential circuitry for performing digital divisional operations to obtain a reciprocal of a constant,

divisor register means comprised of a row of associated flipflops for receiving and storing a digital divisor quantity B,

dividend/quotient register means comprised of a row of associated flipflops for receiving and storing a digital dividend quantity A,

means for simultaneously transmitting a digital divisor quantity B to said divisor register means and a digital dividend quantity A to said dividend/quotient register means,

multiplication means for iteratively determining initially digital acceleration constants a_i and secondly digital quantities q_i computed successively from digital contents of a pseudoradix/q register comprised of two rows of associated flipflops,

counter means comprised of structured circuitry which performs the operation of counting the number of signals with feedback loops responsive not only to its present input but also to inputs that may have been presented previously,

adding means comprised of sequential logical circuitry which performs the operation of adding two digital quantities,

multiplying means comprised of sequential logical circuitry which performs the operation of multiplying two digital quantities,

determination logic a_i means for determining the acceleration constant a_i from the received digital quantity q_i,

said multiplication means being interconnected iteratively with said divisor register means to receive and store a digital pseudoradix D^n and a digital quantity q_i in said pseudoradix/q register,

means for transmitting a signal from said control means to said determination logic a_i means to initiate said iterative process to sequentially transmit a signal each time from said determination logic a_i means,

means for performing a digital evaluation process of the function $q_{i+1}=h_{n+i}(q_i,a_i)=-\{D^{n+1+i}-(a_i+1)(D^{n+i}+\cdots q_i)\}/D^{1+i}$ for i=0,1,2, . . . where $q_o=B-D^n$,

said control means initiating said counter means to count by one each time when said determination logic a_i means sends a signal $s(D-1>a_i)$ when the condition $D-1>a_i$ occurs, said control means actuating said determination logic a_i means to multiply the content of said dividend-/quotient register by the digital quantity, one plus a digital acceleration constant from determination logic a_i means,

said iterative process continuing until a digital quantity q_f, representative of the smallest possible fraction of B, is determined by performing a digital evaluation of the function $q_f=g_{n+i}(q_i,a_i)=\{D^{n+1+i}-a_i(D^{n+i}+q_i)\}/D^{n+1+i}$ and a completion of the multiplying operation of the content of said dividend/quotient register by the acceleration constant when a signal $s(D-1=a_i)$ is generated by said determination logic a_i means when the condition $D-1=a_i$ occurs where q_i and a_i denote the last iterative values,

said multiplication means actuating said control means to bypass said iterative process when a signal $s(D-1>a_0)$ is generated from said determination logic a_i means when the condition $D-1>a_0$ occurs, namely when the present content of said pseudoradix/q register which contains said quantity q_o becomes said quantity q_f,

a determination logic b_k means which, upon receipt of digital quantity q_f, is activated by said control means to sequentially provide a digital acceleration factor b_k by the process of a squaring operation $Q_{k+1}=Q_k^2$ and adding operation $b_k=1+Q_{k+1}$ for k=0,1,2, . . . where $b_o=1-q_f$ and $Q_o=q_f$, and

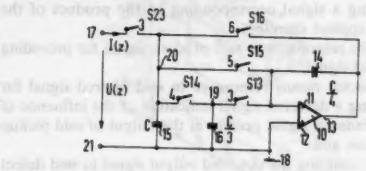
means for transmitting said acceleration factor b_k to said dividend/quotient register means to sequentially multiply it with the present content of said dividend/quotient register means until a predetermined digital accuracy of the quotient has been accumulated when a signal $s(Q_{k+1}\leqq C)$ is generated by said determination logic b_k means when the condition $Q_{k+1}\leqq C$ occurs where C denotes a digital quantity less than the least significant digit of said divisor register.

4,364,116

SWITCHED-CAPACITOR FILTER CIRCUIT HAVING AT LEAST ONE SIMULATED INDUCTOR

Josef Nossek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,759
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932419; Jan. 21, 1980, 3002056
Int. Cl.³ G06G 7/62
U.S. Cl. 364—825 9 Claims



1. In a switched-capacitor filter circuit having first and second input terminals and an operational amplifier having a capacitor connected between the output and the inverting input thereof, said operational amplifier further having a non-inverting input connected to a reference potential, the improvement of:

a first clock pulse-controlled switch interconnected between the inverting input of said operational amplifier and a first circuit node;

a first capacitor interconnected between said first circuit node and said reference potential;

a second clock pulse-controlled switch interconnected between said first circuit node and a second circuit node;

a second capacitor interconnected between said second circuit node and said reference potential;

a third clock pulse-controlled switch interconnected between the inverting input of said operational amplifier and said second circuit node;

a fourth clock pulse-controlled switch interconnected between the output of said operational amplifier and said second circuit node; and

a fifth clock pulse-controlled switch interconnected between said second circuit node and said first input terminal,

said first and fifth clock pulse-controlled switches being closed during a first clock pulse and said second, third and fourth clock pulse-controlled switches being respectively closed during a second, a third, and a fourth clock pulse, said first, second, third and fourth clock pulses being sequential and non-overlapping.

4,364,117

SHOCK-HARDENED, HIGH PRESSURE CERAMIC SONAR TRANSDUCER

Gordon L. Snow, Salt Lake City, Utah, assignor to Edo Western Corporation, Salt Lake City, Utah

Filed Apr. 14, 1980, Ser. No. 140,156
Int. Cl.³ H04R 17/00
U.S. Cl. 367—152 18 Claims

1. A shock-hardened high pressure sonar transducer comprising:

a housing made from a first material having an open front, said housing being capable of withstanding high pressures and severe mechanical shock without damage resulting thereto;

a flexible cover sealed over and around said open front thereby creating a sealed-over front of said housing;

a fluid disposed inside of said housing for coupling pressures throughout the inside of said housing, said fluid being inserted into said housing under pressure;

acoustic impedance mismatch means selectively placed on the inside of said housing for causing said transducer to assume a desired directivity pattern wherein substantially all of the sonar signals associated with the operation of said transducer must be received or transmitted through the sealed-over front of said housing;

protection means for shielding said acoustic impedance mismatch means from direct contact with said pressurized fluid; and

transducer means mounted inside said housing for sensing and generating sonar signals, said transducer means comprising

a plurality of piezoelectric stacks, each having front and rear ends, and each adapted to undergo a dimensional change when stressed electrically and to generate an electrical signal when stressed mechanically;

a single front mass attached directly to the front ends of each of said stacks;

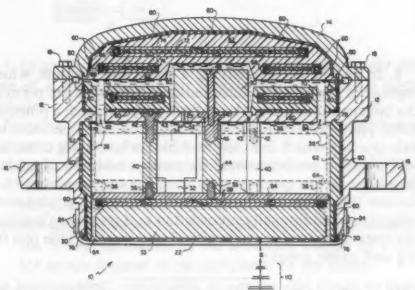
respective rear masses attached directly to the rear ends of each of said stacks;

means for allowing said pressurized fluid to flow around and inside of said stacks;

means for making electrical contact with said stacks, said means adapted to allow external electrical signals to electrically stress said stacks and to further allow electrical signals generated by mechanical stress of said stacks to be externally sensed.

11. A shock-hardened, high pressure ceramic sonar transducer comprising:

a housing having an open end;



a lining made of an acoustic impedance mismatch material affixed to at least a portion of the inside walls of said housing for causing the transducer to exhibit a desired directivity pattern wherein substantially all of the sonar signals associated with the operation of the transducer are received or transmitted through the open end of said housing;

a flange protruding inwardly around the inside wall of said housing;

a plurality of piezoelectric ceramic stacks attached to said flange with a front end of each of said stacks facing said open end of said housing, each of said stacks having electrical contact made therewith via an electrical conductor;

a front mass attached to the front ends of said ceramic stacks;

a flexible cover sealed over said open end of said housing, thereby creating a sealed-over front end of said housing;

a transformer mounted to said flange and electrically coupled to said electrical conductor;

means for making external electrical contact with said transformer through said housing;

a plurality of laminated baffle boards positioned near a rear end of said ceramic stacks, said baffle boards being comprised of material that exhibit a desired acoustic impedance;

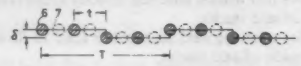
a dehydrated, nonconductive oil disposed under pressure inside of said housing for transferring, equalizing, and distributing pressures within said transducer; and

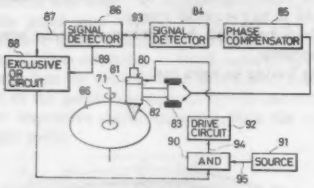
a covering material selectively placed inside of said housing to cover said lining material and shield it from contact with the oil and to hold and maintain said baffle boards in a desired position.

4,364,118
OPTICAL DISK AND OPTICAL INFORMATION PROCESSOR

Takeshi Maeda, Kokubuji; Kazuo Shigematsu, Kawasaki, and Seiji Yonezawa, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,199
Claims priority, application Japan, Jun. 25, 1979, 54-79210; Apr. 16, 1980, 55-49235
Int. Cl.³ G11B 7/00, 21/04
U.S. Cl. 369—44 6 Claims



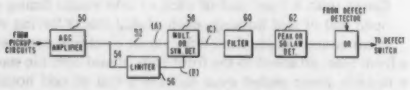


1. In an optical disk having a recording medium which is capable of recording an information signal in a form permitting the information signal to be optically reproduced; a plurality of guide pits recorded in said recording medium at periodic intervals in a line which minutely wobbles in a rotating direction of said disk at a predetermined frequency, said line of guide pits forming a guide groove to be used for tracking control, and further including information pits designating predetermined information additionally recorded in said recording medium in the intervals between guide pits of said line of guide pits forming said guide groove.

4,364,119
VIDEO DISC PLAYER WITH RFI REDUCTION CIRCUIT INCLUDING A SIGNAL PRODUCT GENERATOR

John J. Gibson, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,982
Int. Cl.³ H04N 5/80
U.S. Cl. 369—126 9 Claims

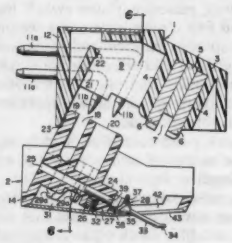


1. In a video disc player of the type having:
pickup apparatus for recovering an information signal recorded on a disc in the form of a modulated carrier signal;
demodulation apparatus coupled to said pickup apparatus for demodulating said modulated carrier, defect detection apparatus coupled to said pickup apparatus for detecting defects in the recovered signal; and defect compensation apparatus coupled to said demodulation apparatus and to said defect detection apparatus and responsive to the operation of the defect detection apparatus for providing a substitute signal in place of the recovered signal in the playback display of said information signals during occurrences of defects in the recovered signal; said player being subject to interference with normal playback display operations due to the pickup of unrecorded, externally applied signals; apparatus for reducing the influence of said external signals comprising:
amplifier means connected to said pickup apparatus;
first and second conductive paths responsive to the signals provided by said amplifier means, said first conductive path including a signal limiter;
product generation means responsive to the signals on said second path and to the signals provided by said limiter for providing a signal corresponding to the product of the signals applied thereto;
filter means responsive to said product signal for providing a filtered signal;
signal detector means responsive to said filtered signal for providing a detected signal indicative of the influence of the extraneous signal present at the output of said pickup apparatus; and
means for coupling the detected output signal to said defect compensation apparatus.

4,364,120
PICKUP CARTRIDGE OF MOVING COIL TYPE FOR PHONOGRAPH

Kimiyasu Honma, Machida, Japan, assignor to Kabushiki Kaisha Audio-Technica, Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 78,136
Claims priority, application Japan, Oct. 6, 1978, 53-123396
Int. Cl.³ H04R 9/04, 9/16
U.S. Cl. 369—138 7 Claims



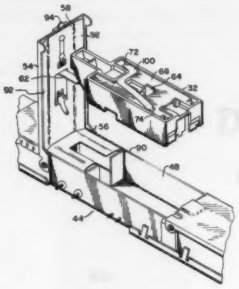
1. A replaceable stylus assembly for attachment to another phonograph cartridge portion, said stylus assembly comprising
a body having a bottom wall and a pair of side walls,
an upstanding post on said body projecting upwardly from said bottom wall and above said side walls to fit into a recess in the said other cartridge portion;
a cantilever arm projecting downwardly and forwardly from said body;
a stylus tip on an outer free end of said cantilever arm;
armature means including a pair of rods of magnetic material projecting upwardly from said cantilever with the axes of the rods lying in a plane perpendicular to the axes of the cantilever arm and each forming an angle of 45° with respect to an imaginary vertical plane through the axis of the cantilever arm;
a coil on each of said rods;
said side walls defining a downwardly opening cavity in said body to admit pole pieces into close proximity to said coils on said rods;
electrical connector means disposed on each side of said upstanding post for connection to electrical connectors on said other cartridge portion;
and electrical lead means extending between said coils and said electrical connector means disposed on each side of said upstanding post.

4,364,121

PICKUP CARTRIDGE FOR VIDEO DISC PLAYER

Myron C. Stewart, Coatesville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,416
Int. Cl.[3] G11B *25/04*
U.S. Cl. 369—256 5 Claims



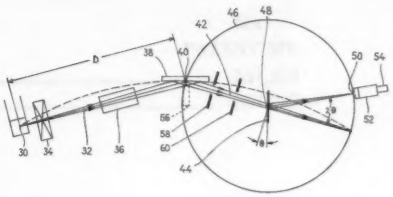
1. A cartridge for use with a video disc player for recovering prerecorded signals disposed on a disc record by means of a pickup device; said pickup device being housed in said cartridge; said cartridge having a top surface and a plurality of peripheral surfaces; said player including a translatable carriage having a compartment for housing said cartridge; said carriage compartment having a bottom wall with an aperture through which said pickup device extends for record engagement, and side walls for enclosing said cartridge; said carriage compartment further having a cartridge access door subject to disposition in an open position and a closed position; said carriage further housing a source of RF energy coupled to said pickup device for sensing said prerecorded signals; said walls of said cartridge compartment and said access door having a conductive property for substantially confining said RF energy to said compartment; the top edges of said side walls of said cartridge compartment being continuous and subject to engagement with the underside of said access door, when said access door is closed, to reduce RF energy leakage; the spacing between said top edges of said side walls of said cartridge compartment and the periphery of said cartridge, upon its reception in said compartment, being such that the grasping of said peripheral surfaces of said cartridge directly with human fingers is precluded; said cartridge having handling means disposed on said top surface thereof for facilitating placement and removal of said cartridge into and from said compartment when said access door is opened; said cartridge handling means comprising a substantially planar flexible strip having its ends attached to said top surface of said cartridge.

4,364,122

X-RAY DIFFRACTION METHOD AND APPARATUS

Erich R. Wölfel, Mozartweg 1h, D-6100 Darmstadt, and Hans-Georg Diercks, Willersweg 34d, D-2000 Hamburg 62, both of Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,442
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933047
Int. Cl.[3] G01N *23/20*
U.S. Cl. 378—73 24 Claims



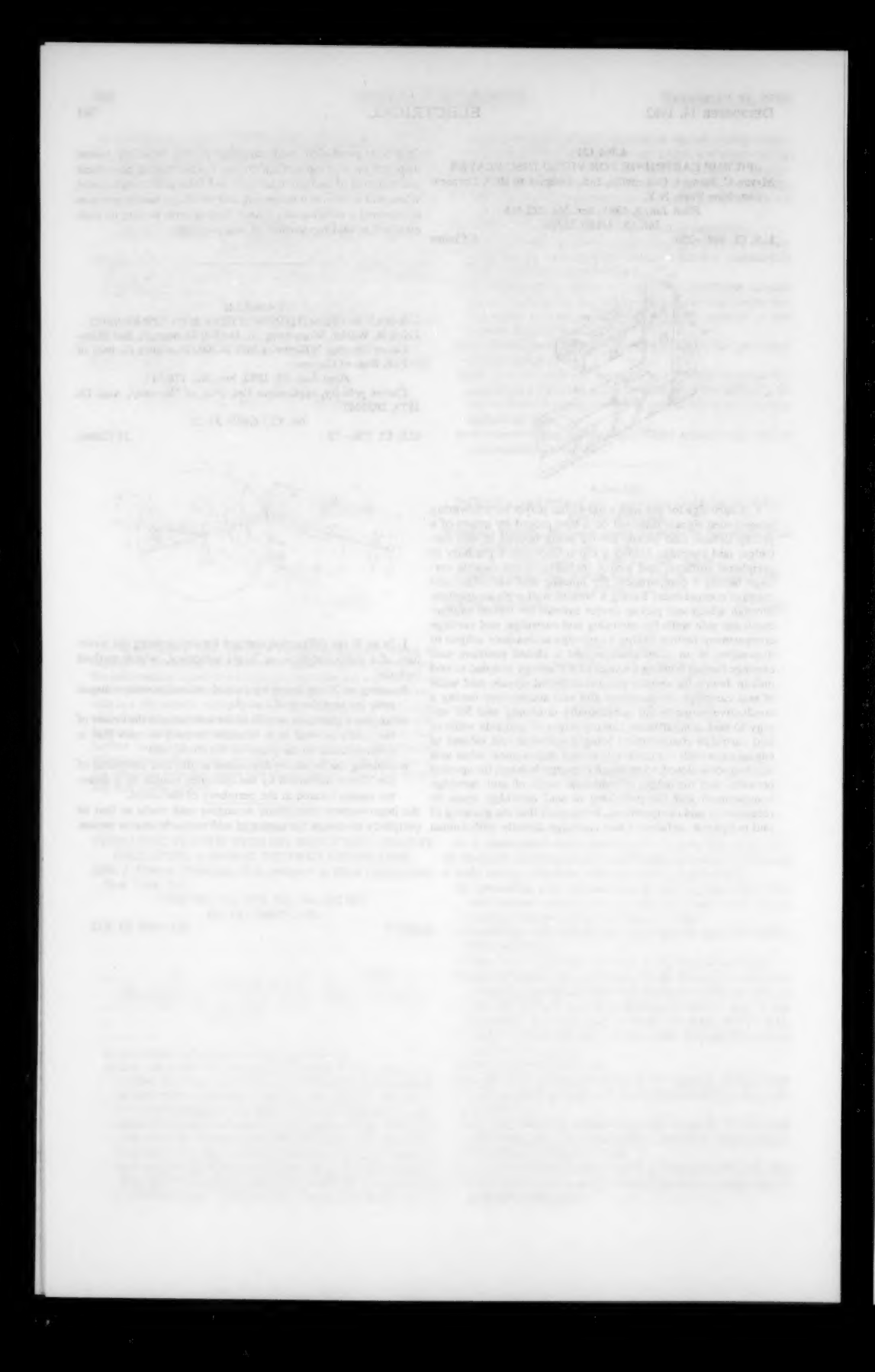
1. In an X-ray diffraction method for determining the structure of a polycrystalline or liquid substance, which method includes

focusing an X-ray beam by curved monochromator means onto the periphery of a circle,

arranging a specimen sample of the substance in the center of the circle so that it is rotatable around an axis that is perpendicular to the plane of the circle, and

measuring the structure dependent angles and intensities of the X-rays diffracted by the specimen sample by a detector means located at the periphery of the circle,

the improvement comprising arranging said circle so that its periphery intersects the center of said monochromator means.



DESIGN PATENTS

GRANTED DEC. 14, 1982

ERRATA

For CLASS	See PATENT NO.
D23–138	267,223
D34–021	267,243

DECEMBER 14, 1982

267,206

CHASUBLE

Dirk E. E. Slabbinck, c/o Kunstateliers Slabbinck P.V.B.A., Lieven Bauwensstraat, 18 Brugge, Belgium

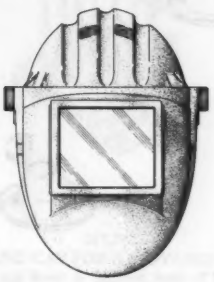
Filed Apr. 14, 1980, Ser. No. 140,083
Claims priority, application Belgium, Nov. 9, 1979, 1993-01
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—79

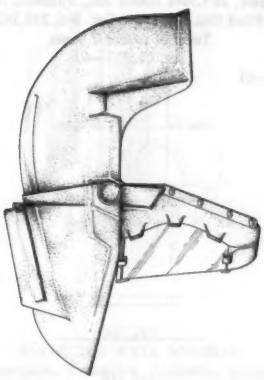
267,207

WELDER'S HELMET

Joseph R. Hilton, Guildford, England, assignor to Racal Corporation, Rockville, Md.

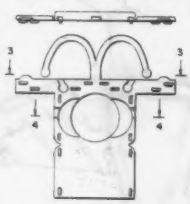
Filed Oct. 17, 1980, Ser. No. 198,166
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



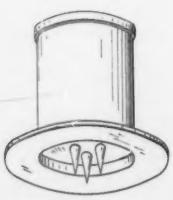


267,208
HAT
Ronald J. Denison, 6652 Las Animas Dr., Martinez, Calif. 94553
Filed Aug. 18, 1980, Ser. No. 178,975
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—252

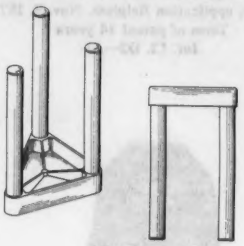
267,209
TWIN LOCK KEY RING
Hanns W. Beier, 26 Clove Brook Rd., Valhalla, N.Y. 10595
Filed Dec. 11, 1980, Ser. No. 215,242
Term of patent 7 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



267,210
SNOWMAN HAT CONTAINER
Brian P. Schwuchow, 2110 W. 3rd. St., Hobart, Ind. 46342
Filed Jan. 26, 1981, Ser. No. 228,287
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—66

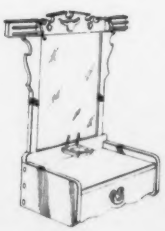


267,211
SHOWER STOOL OR SIMILAR ARTICLE
Roy C. Farrell, Herring Bldg. #400, Vernon, Tex. 76384
Filed Apr. 21, 1980, Ser. No. 141,772
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—55



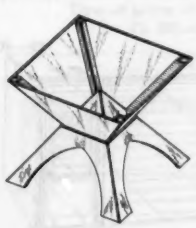
267,212
MAGNETIC RACK FOR POT HOLDERS
Ruediger Einhorn, Katonah, and Lee R. Chasen, Port Chester, both of N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.
Filed Oct. 16, 1980, Ser. No. 197,636
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*
U.S. Cl. D6—114

267,213
COMBINED VALET WALL RACK AND DRAWER UNIT
David Nusz, 2025 W. Mark, Layton, Utah 84041
Continuation-in-part of Ser. No. 67,837, Aug. 20, 1979, Pat. No. Des. 260,586, which is a continuation-in-part of Ser. No. 974,128, Dec. 26, 1978, Pat. No. Des. 257,303. This application Sep. 12, 1980, Ser. No. 186,524
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—123

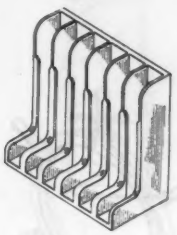


267,214
GAME TABLE OR SIMILAR ARTICLE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed May 12, 1980, Ser. No. 148,708
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—152

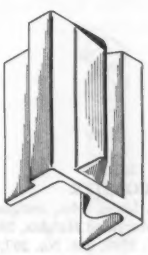
267,215
PLANTER
Paul D. Peterson, 3310 Azahar Pl., Rancho La Costa, Calif. 92008
Division of Ser. No. 76,474, Sep. 17, 1979, Pat. No. Des. 263,187. This application Feb. 4, 1982, Ser. No. 345,579
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*
U.S. Cl. D6—183



267,216
CASSETTE HOLDER
Milton D. Swan, 4417 Red Maple Ct., Concord, Calif. 94521
Filed Jul. 22, 1980, Ser. No. 171,167
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

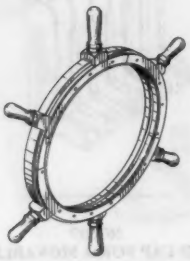


267,217
UNIVERSAL END CAP FOR A MOVABLE WALL PANEL
Dean S. White, and Scott A. Shaffer, both of New Castle, Ind., assignors to American Standard Inc., New York, N.Y.
Filed Dec. 15, 1980, Ser. No. 216,592
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191

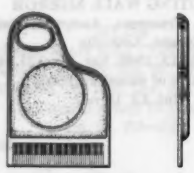


267,218
PIVOTING WALL MIRROR
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Feb. 13, 1980, Ser. No. 121,242
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—243

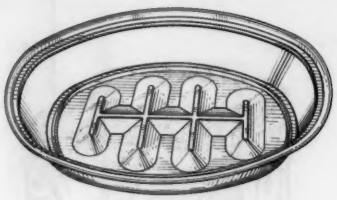
267,219
SIMULATIVE PICTURE FRAME
Daniel C. McNamara, 419 W. Fairbanks Ave., Winter Park, Fla. 32789
Filed Oct. 27, 1980, Ser. No. 201,144
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—243

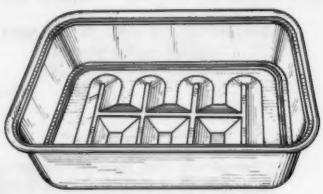


267,220
COASTER
Richard B. Cronheim, St. Louis, Mo., assignor to Aluminum Housewares Co., Inc., Maryland Heights, Mo.
Filed Nov. 17, 1980, Ser. No. 207,150
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—45

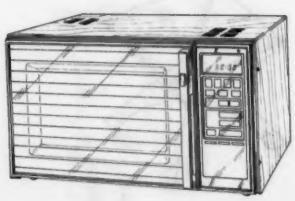


267,221
ROASTER
Bruce F. Williams, Toronto, Canada, assignor to American Home Products Corporation, New York, N.Y.
Filed Nov. 3, 1980, Ser. No. 203,859
Claims priority, application Canada, May 2, 1980, 02-05-80-7
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—359

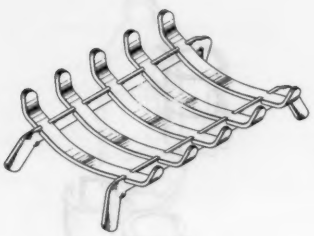




267,222
MICRO-WAVE OVEN
Masamichi Yamamura, Osaka; Toshio Harada, and Michio Tanaka, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1980, Ser. No. 217,882
Claims priority, application Japan, Jul. 3, 1980, 55-26650
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351

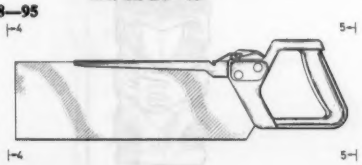


267,223
FIREPLACE GRATE
Robert D. Hassett, Prospect, Ky.; Robert C. Dew, New Albany, Ind., and Clifford E. Wieting, Louisville, Ky., assignors to S & T Industries, Inc., Louisville, Ky.
Filed Dec. 15, 1980, Ser. No. 216,551
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—138.5

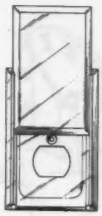


267,224
PNEUMATIC SUPPORT FRAME FOR A ROTARY SANDER
Ernest M. Rogers, 1360 E. 71st St., Los Angeles, Calif. 90001
Filed Nov. 4, 1977, Ser. No. 848,456
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—62

267,225
HAND SAW
Hiroji Shimizu, Miki, Japan, assignor to Shin Nihon Kinzoku Kabushiki Kaisha, Miki, Japan
Filed Aug. 22, 1980, Ser. No. 180,516
Claims priority, application Japan, May 19, 1980, 55-19759
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—95

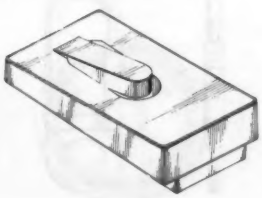


267,226
COMBINED WALL PLATE AND COVER
Stanley Oster, 8120 NW. 73rd Ter., Tamarac, Fla. 33319
Filed Aug. 16, 1979, Ser. No. 67,095
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—353

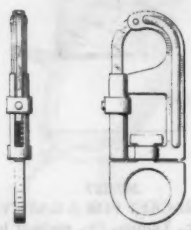


267,227
SUPPORT BRACKET FOR A GAS CYLINDER
Theodore Ziaylek, Jr., Yardley, Pa., assignor to Ziamatic Corporation, Yardley, Pa.
Filed Jul. 28, 1980, Ser. No. 172,578
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D8—373

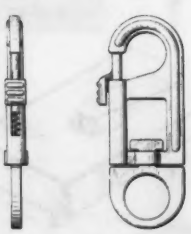
267,228
WEDGE FASTENER
William H. Channell, 122 Oak Tree Dr., Glendora, Calif. 91740
Filed Jun. 17, 1980, Ser. No. 160,210
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



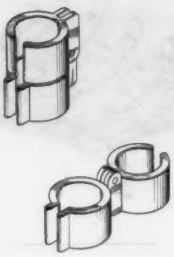
267,229
SNAP HOOK
Alexander Garcia, Berlin, Conn., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Jul. 3, 1980, Ser. No. 165,899
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



267,230
SNAP HOOK
Paul A. LaViolette, North Haven, Conn., and Anthony Caccioli, Longmeadow, Mass., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Jul. 3, 1980, Ser. No. 165,900
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



267,231
SKI POLE CLIP
Thomas E. Guem, Jr., 3158 Grand View Blvd., Los Angeles, Calif. 90066
Filed Nov. 9, 1979, Ser. No. 93,147
Term of patent 14 years
Int. Cl. D8—*08*; D21—*02*
U.S. Cl. D8—395



267,232
BOTTLE
Diane C. Balich, Sturges Rd., Henderson, Auckland, New Zealand
Filed Nov. 7, 1979, Ser. No. 91,202
Claims priority, application New Zealand, May 29, 1979, 16078
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—311

267,233
BOTTLE
Katashi Aoki, 6037 Ohazaminamijo, Sakaki-machi, Hanishina-gun, Nagano-ken, Japan
Filed Oct. 16, 1980, Ser. No. 197,557
Claims priority, application Japan, Apr. 18, 1980, 55-15329
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

267,234
DISPENSING CONTAINER FOR PILLS OR THE LIKE
Hans-Göran H. Lunden, Södertälje, Sweden, assignor to Astra-Syntex Scandinavia Aktiebolag, Södertälje, Sweden
Filed Jun. 20, 1980, Ser. No. 161,226
Claims priority, application Sweden, Dec. 20, 1979, 79-2782
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

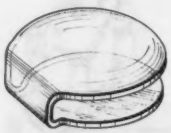
267,235
DIGITAL PENDULUM CLOCK
Anthony R. Tumeo, 8625 Hillary Dr., San Diego, Calif. 92126
Filed Sep. 27, 1979, Ser. No. 79,390
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

267,236
CLOCK
George A. Kemper, Jr., P.O. Box 745, Marble Falls, Tex. 78654
Filed Dec. 22, 1980, Ser. No. 219,354
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—23

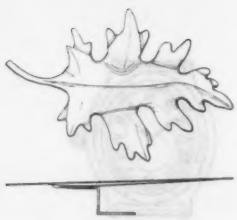
267,237
WATCH
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Jul. 7, 1980, Ser. No. 166,745
Claims priority, application Hague, Jan. 7, 1980, 69 774
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

267,238
CARBOHYDRATE-CALORIE RECORDER
Carl M. Schafer, 1887 Hannibal Dr., Lafayette, Calif. 94549, assignor to Carl M. Schafer, Lafayette, Calif.
Filed Oct. 7, 1980, Ser. No. 192,094
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—97

267,239
WATCH CRYSTAL PROTECTOR
Norman H. Allen, North Scituate, R.I., assignor to RAS Industries, Inc., Providence, R.I.
Filed Oct. 20, 1980, Ser. No. 199,036
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—132

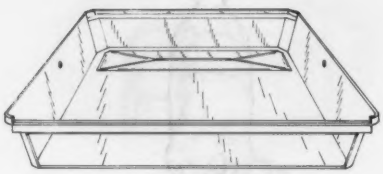


267,240
METAL SCULPTURE
Donald R. Ditto, Rte. 2, Box 60F2, Winnsboro, Tex. 75494
Filed Nov. 28, 1980, Ser. No. 211,387
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

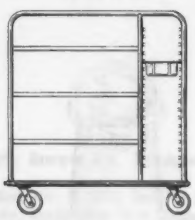


267,241
EARRING
Marina Bulgari, Nafpaktos, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Feb. 21, 1979, Ser. No. 13,314
Claims priority, application Switzerland, Aug. 24, 1978, 110058
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—75

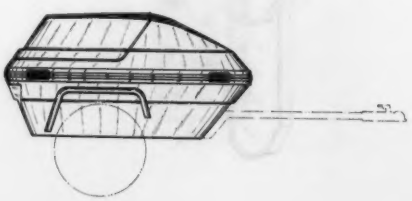
267,242
STACKABLE UNIT FOR A SEED GERMINATING DEVICE
William L. Smith, and Robert B. Whitson, both of P.O. Box 853, Dyersburg, Tenn. 38024
Filed Dec. 31, 1979, Ser. No. 108,568
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—155



267,243
HOSPITAL SUPPLY CART
Noel L. Jemas, Chesterfield, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Sep. 27, 1979, Ser. No. 79,573
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—21



267,244
TRAILER BODY
Donald J. Reid, Plymouth, Mich., assignor to Kelsey Hayes Co., Romulus, Mich.
Filed Dec. 22, 1980, Ser. No. 218,885
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

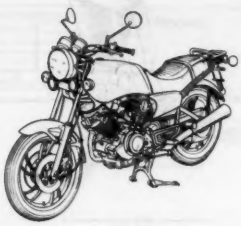


267,245

MOTORCYCLE

Shinji Iwasaki, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Mar. 5, 1981, Ser. No. 240,802
Claims priority, application Japan, Sep. 6, 1980, 55-36784
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

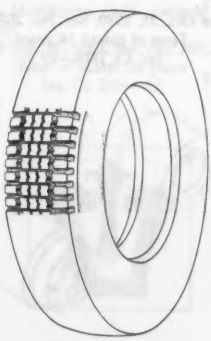


267,246

TIRE

Philip S. Hammond, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 29, 1980, Ser. No. 182,558
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—148

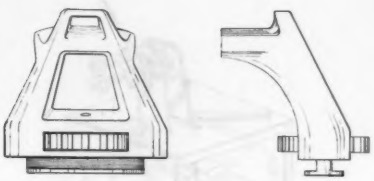


267,247

TIE DOWN BRACKET FOR LUGGAGE RACK

Ben C. Kowalski, Troy; Daniel J. Kowalski, Ortonville, and Douglas J. Ferguson, Davisburg, all of Mich., assignors to Four Star Corporation, Troy, Mich.

Filed Sep. 25, 1978, Ser. No. 945,257
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



267,248

STEERING WHEEL, OR THE LIKE

Tommy A. Poteet, Sylmar, Calif., assignor to Whittar Industries, Ltd., Bannockburn, Ill.

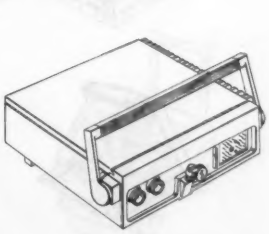
Filed Sep. 2, 1980, Ser. No. 183,351
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—176

267,249

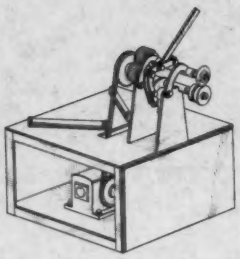
TRANSCEIVER FOR A CAR TELEPHONE SET

Hisao Fukushima; Kimpei Yamauchi, and Junji Hirooka, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,507
Claims priority, application Japan, Dec. 25, 1979, 54-054179
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

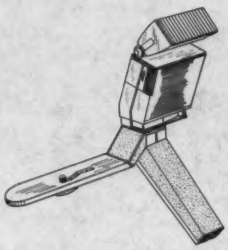


267,250
TIRE STRIPPING MACHINE OR THE LIKE
Ronald L. Meyer, 8710 Cory La., Boise, Id. 83704
Filed Oct. 14, 1980, Ser. No. 196,493
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



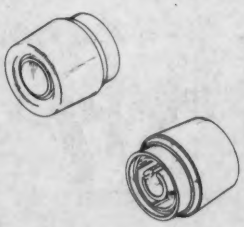
267,251
BRIEFCASE MICROFICHE READER
William T. Link, Berkeley, and Stephen Hobson, Palo Alto, both of Calif., assignors to Datagraphix, Inc., San Diego, Calif.
Filed Mar. 4, 1980, Ser. No. 127,263
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—18

267,252
CAMERA FLASH ATTACHMENT
Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Inc., Littleton, Colo.
Filed Apr. 17, 1980, Ser. No. 141,143
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

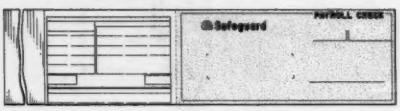


267,253
TYPEWRITING MACHINE
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Oct. 16, 1980, Ser. No. 197,722
Claims priority, application Italy, Apr. 16, 1980, 53131-B/80[U]
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1

267,254
CONTROL KNOB FOR OFFICE MACHINES
John E. Jolliffe, Manlius, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Oct. 31, 1980, Ser. No. 202,835
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—12



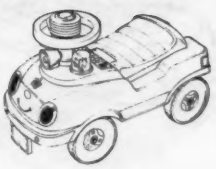
267,255
CHECK
Vincent G. Bell, Jr., Berwyn; Thomas P. Burke, Harleysville, both of Pa.; George D. Margolin, Newport Beach, and Victor V. Vurpillat, Laguna Niguel, both of Calif., assignors to Centurion Data Corporation, King of Prussia, Pa.
Filed Feb. 21, 1978, Ser. No. 879,117
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—11



267,256
COMBINED CLIP AND SLIDERS FOR A WRITING INSTRUMENT
Nathan A. Zepell, 1359 Santa Teresita, Santa Barbara, Calif. 93101
Continuation-in-part of Ser. No. 899,004, Apr. 21, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 117,871
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—56

267,257
SET OF CHESS PIECES
James J. Perano, Hawthorne, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Sep. 15, 1980, Ser. No. 187,236
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52

267,258
TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Oct. 24, 1980, Ser. No. 200,355
Claims priority, application Japan, Aug. 8, 1980, 55-32406
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—78

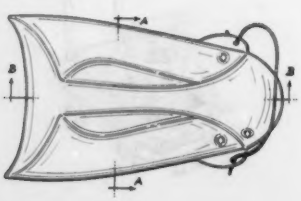


267,259
TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Oct. 24, 1980, Ser. No. 200,357
Claims priority, application Japan, Aug. 8, 1980, 55-32408
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—78

267,260
TOY CAROUSEL
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 8, 1980, Ser. No. 213,937
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—124

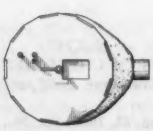
267,261
EXERCISE BAR
Casimer J. Pataluch, 218 Garden St., LaPorte, Ind. 46350
Filed Jun. 19, 1980, Ser. No. 161,217
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—198

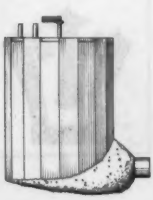
267,262
INFLATABLE FLOAT
Geoffrey P. Gorick, Killarney Heights, and Robert W. Day, Mosman, both of Australia, assignors to Acme-Gorick Pty. Ltd., Five Dock and Day & Parsonage Publishing Co. Pty. Limited, North Sydney, both of, Australia
Filed Dec. 18, 1978, Ser. No. 970,500
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—237



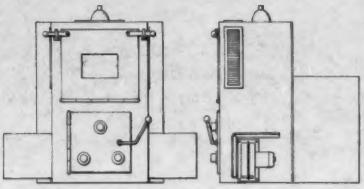
267,263
GUN STOCK BUTT ELEMENT
Timo Hyytinen, Keski-Palokka, Finland, assignor to Valmet Oy, Finland
Filed Jun. 9, 1980, Ser. No. 157,968
Claims priority, application Finland, Dec. 20, 1979, 757/79
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

267,264
MANURE HOLDING TANK
Roger F. Wacker, R.R. #2, Frazee, Minn. 56544
Filed May 23, 1980, Ser. No. 152,785
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

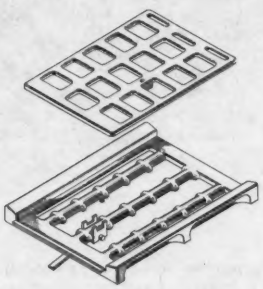




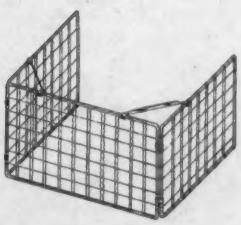
267,265
FIREPLACE INSERT WITH OVEN
John H. Councill, Jr., 200 Councill St., Boone, N.C. 28607
Filed Feb. 6, 1981, Ser. No. 232,203
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



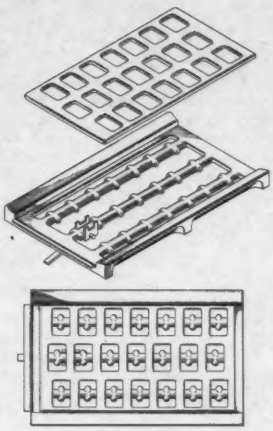
267,266
CAST IRON GRATE FOR COAL BURNING STOVES AND THE LIKE
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed Aug. 27, 1980, Ser. No. 185,540
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—135



267,267
STOVE SHIELD
Kirkwood S. Nevin, III, Box 316A, R.D. #2, White Hall, Md. 21161
Filed Aug. 6, 1980, Ser. No. 175,659
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—137

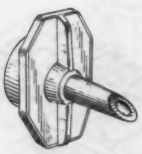


267,268
CAST IRON GRATE FOR SOLID FUEL BURNING STOVES AND THE LIKE
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed Oct. 6, 1980, Ser. No. 193,913
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—135

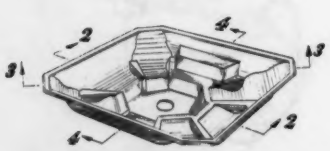


267,269
CONTAINER FOR USE IN ANAEROBIC BACTERIOLOGY
Alan Jukes, West Wickham, England, assignor to Oxoid Limited, Basingstoke, England
Filed Apr. 18, 1980, Ser. No. 141,674
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8

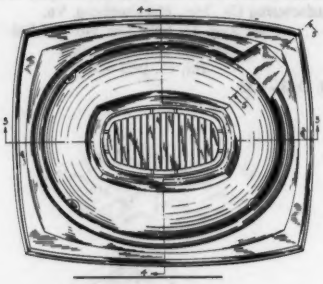
267,270
DRIP CHAMBER SPIKE
Herbert Mittleman, Deerfield, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Nov. 15, 1979, Ser. No. 94,378
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—24



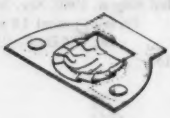
267,271
BATHING POOL
Warren W. Kingsley, Sherman Oaks, and Robert C. Kingsley, Los Angeles, both of Calif., assignors to Hydro-Spa, Inc., Piru, Calif.
Filed Dec. 13, 1979, Ser. No. 103,197
Term of patent 14 years
Int. Cl. D23—*02*; D24—*01*
U.S. Cl. D24—38

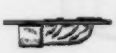


267,272
COMBINED ISLAND HYDROTHERAPY SPA AND TABLE THEREFOR
Donald W. Doman, Janesville, and Alfred W. Elsner, Plymouth, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Aug. 28, 1980, Ser. No. 182,064
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*; D25—*99*
U.S. Cl. D24—38



267,273
DEVICE FOR CATCHING FECAL SAMPLES WHEN USING A TOILET STOOL
Esteban Paulin, Queretaro, Mexico, assignor to Manuel Gonzales Cosio, Mexico City, Mexico, a part interest
Filed Sep. 11, 1980, Ser. No. 186,503
Term of patent 14 years
Int. Cl. 24—*02, 04*
U.S. Cl. D24—57



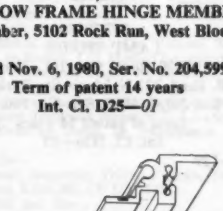


267,274
COMBINED DOOR AND HANDLE
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Aug. 29, 1980, Ser. No. 182,760
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48

267,275
COMBINED DOOR AND HANDLE
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Aug. 29, 1980, Ser. No. 182,761
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48

267,276
COMBINED DOOR AND HANDLE
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Aug. 29, 1980, Ser. No. 182,692
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48

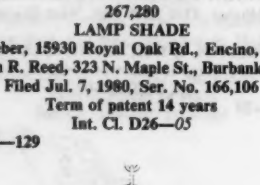
267,277
WINDOW FRAME HINGE MEMBER
Marvin L. Goldhaber, 5102 Rock Run, West Bloomfield, Mich. 48033
Filed Nov. 6, 1980, Ser. No. 204,599
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



267,278
TORCH
Andrew K. Yau, Hong Kong, Hong Kong, assignor to Practical Products Mfy. Ltd., Hong Kong, Hong Kong
Filed Apr. 28, 1980, Ser. No. 144,109
Claims priority, application United Kingdom, Feb. 7, 1980, 993523
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—49

267,279
TORCH
Andrew K. Yau, Hong Kong, Hong Kong, assignor to Practical Products Mfy. Ltd., Hong Kong, Hong Kong
Filed Jun. 9, 1980, Ser. No. 157,605
Claims priority, application United Kingdom, Apr. 10, 1980, 994435
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—49

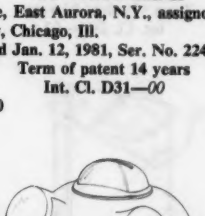
267,280
LAMP SHADE
Franz K. Weber, 15930 Royal Oak Rd., Encino, Calif. 91436, and Martin R. Reed, 323 N. Maple St., Burbank, Calif. 91505
Filed Jul. 7, 1980, Ser. No. 166,106
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—129



267,281
GRILL CLEANER DEVICE
Daniel J. Mottl, and Glen J. Mottl, both of Burr Ridge, Ill., assignors to Atlas Tool & Die Works, Inc., Lyons, Ill.
Filed Jul. 7, 1980, Ser. No. 166,741
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—46

267,282
SPONGE APPLICATOR, OR THE LIKE
James R. Gross, Bartlett, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 9, 1980, Ser. No. 195,709
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—51

267,283
TOY PIGGY BANK
Larry R. Nagode, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 12, 1981, Ser. No. 224,617
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Engstrom, Folke, 4,363,292, Cl. 122-4.00D.

Aakenus, Tiina; Mertanen, Pekka; and Peltonen, Reijo, to Oy Wartsila AB. Vessel for food preparation. 4,363,316, Cl. 126-390.000.

AB Asea-Atom: *See*—
Hannerz, Kare, 4,363,780, Cl. 376-282.000.

AB Welin: *See*—
Nilsson, Emanuel, 4,363,150, Cl. 14-69.500.

Abbott Laboratories: *See*—
Chittenden, Richard M., 4,363,321, Cl. 128-214.00R.

Abbott, Robert L., to Babcock & Wilcox Company, The. Monitor circuit for a control rod drive mechanism. 4,363,778, Cl. 376-228.000.

Abbott, Ronald L., to Inventco Sales Limited. Apparatus for producing and dispensing cold products. 4,363,223, Cl. 62-303.000.

Abe, Osamu: *See*—
Amano, Matsuo; Mouri, Yasunori; Abe, Osamu; Suda, Seiji; and Sasayama, Takao, 4,363,307, Cl. 123-492.000.

Achter, Eugene K.; Kremen, Jerome C.; Rodriguez, Rodolfo R.; and Priarone, Paolo, to Baxter Travenol Laboratories, Inc. Nephelometer having means semiautomatically canceling components from scattering by particles smaller or larger than those of interest. 4,363,551, Cl. 356-338.000.

ACI Operations Pty. Ltd.: *See*—
Marshall, Steven; and Papaluca, Vincent, 4,363,203, Cl. 53-109.000.

Acker, Rolf-Dieter; Hamprecht, Gerhard; and Mueller, Franz-Josef, to BASF Aktiengesellschaft. Preparation of aromatic silanes. 4,363,925, Cl. 556-415.000.

Adachi, Takao: *See*—
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.

Adams, Allen S.; and Caesar, Michael B., to Occidental Chemical Corp. Apparatus for reacting a particulate solid and a liquid. 4,363,786, Cl. 422-189.000.

Adams Hard-Facing Company, Inc.: *See*—
Wetmore, Halsey J., 4,363,364, Cl. 172-732.000.

Adamson, James R., Jr.: *See*—
Efkeman, Edward J.; Lloyd, Elliott; Dickson, Howard K.; and Adamson, James R., Jr., 4,363,967, Cl. 250-339.000.

Advance Dental Corporation: *See*—
Johnston, Reece W., 4,363,624, Cl. 433-9.000.

Advanced Diagnostic Research Corporation: *See*—
Kopel, LeRoy, 4,363,326, Cl. 128-660.000.

Agfa-Gevaert AG: *See*—
Oberhoffner, Gerhard; Koninger, Horst; and Kastl, Alfons, 4,363,548, Cl. 354-298.000.

Ahuja, Ramesh C.: *See*—
van Turnhout, Jan; and Ahuja, Ramesh C., 4,363,860, Cl. 430-83.000.

Aiba, Masahiko, to Sharp Kabushiki Kaisha. Ink issuance direction check system in an ink jet system printer. 4,364,055, Cl. 346-1.100.

Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, to Olympus Optical Company Ltd. Photographing apparatus. 4,363,541, Cl. 354-23.00D.

Air Products and Chemicals, Inc.: *See*—
Markham, Larry D.; and Eklund, Henrik J., 4,363,697, Cl. 162-19.000.

Airway Industries, Inc.: *See*—
Philips, Gary, 4,363,770, Cl. 264-87.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.
Ohmi, Atsushi, 4,363,259, Cl. 91-422.000.
Watanabe, Yutaka; and Nishio, Hirochika, 4,363,839, Cl. 428-31.000.

Aizawa, Hiroshi: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.

Aizawa, Tsuneo; and Onishi, Kenji, to Amada Company, Limited. Horizontal bandsaw machine. 4,363,254, Cl. 83-800.000.

Akamatsu, Akihiro; Takeuchi, Masaki; and Yamashita, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Discrete type automated chemical analytic apparatus. 4,363,781, Cl. 422-65.000.

Akanuma, Shigetake: *See*—
Nakamura, Joji; and Akanuma, Shigetake, 4,363,518, Cl. 299-14.000.

Akashiba, Takeo; Nakayama, Akira; and Murata, Atsuhiko, to Showa Denko K.K. Process for producing L-tryptophan, and a pure culture of a microorganism strain used in said process. 4,363,875, Cl. 435-108.000.

Akatsuka, Masayuki: *See*—
Isshiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, 4,364,023, Cl. 340-146.30H.

Akebono Brake Industry Company, Ltd.: *See*—
Ogiwara, Osao, 4,363,884, Cl. 523-156.000.

AKG Akustische u.Kino-Gerate Gesellschaft m.b.H.: *See*—
Bruna, Bernhard, 4,363,937, Cl. 179-121.00R.

Akimoto, Norio: *See*—
Imamura, Kazuyoshi; Akimoto, Norio; and Awaya, Shozo, 4,363,853, Cl. 428-480.000.

Akimoto, Taizo; and Kawase, Yasuo, to Fuji Photo Film Co., Ltd. Color correction monitoring system. 4,364,084, Cl. 358-76.000.

Aktiebolaget Bofors: *See*—
Simmons, Bjorn, 4,363,272, Cl. 102-202.130.

Aktiebolaget Draco: *See*—
Bergstrom, Karl O.; Ulmius, Jan; and Wenngren, Bo L. T., 4,363,806, Cl. 424-241.000.

Aktiebolaget Electrolux: *See*—
Leinfelt, Karl E., 4,363,156, Cl. 15-327.00R.

Akzona Incorporated: *See*—
Schall, Roy F., Jr., 4,363,634, Cl. 23-230.00B.

Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., to General Foods Corporation. Flavor stabilized beet composition. 4,363,810, Cl. 426-262.000.

Albert, Rudolf; Willemsens, Albert; and van der Veken, Guido, to Janssen Pharmaceutica N.V. Method of preparing 1-alkyl-3-carboxy-1H pyrrole-2-acetic acids. 4,363,918, Cl. 548-531.000.

Albertson, Robert V. Heating apparatus. 4,363,314, Cl. 126-110.00B.

Alcolac, Inc.: *See*—
Panzer, George W.; and Boyer, William, 4,363,724, Cl. 209-166.000.

Allaire, Roger A.; and Blanding, Wendell S., to Corning Glass Works. Floating vanes for flat panel display system. 4,363,648, Cl. 65-42.000.

Allan, Colin J.; and McIntyre, Ian L., to Canada, Atomic Energy of, Limited. Self-powered neutron flux detector assembly. 4,363,970, Cl. 250-390.000.

Allegheny Ludlum Steel Corporation: *See*—
Zaremski, Donald R., 4,363,709, Cl. 204-145.00R.

Allen Engineering Corporation: *See*—
Allen, J. Dewayne, 4,363,618, Cl. 425-458.000.

Allen, J. Dewayne, to Allen Engineering Corporation. Triangular truss screed having an end mounted guide bracket for engaging a wall-mounted support member. 4,363,618, Cl. 425-458.000.

Allen, Keith: *See*—
Bryer, James E.; Mayes, Alan P.; and Allen, Keith, 4,363,168, Cl. 29-869.000.

Alsgaard, David W.: *See*—
Gibbs, Marylu B.; Biggs, Robert D.; and Alsgaard, David W., 4,363,792, Cl. 423-335.000.

Altschuler, J. George: *See*—
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,363,849, Cl. 428-318.800.

Altshuler, John H., to Applied Medical Devices, Inc. Ready-to-use bandage incorporating a coagulant composition and method of preparing same. 4,363,319, Cl. 128-156.000.

Amada Company, Limited: *See*—
Aizawa, Tsuneo; and Onishi, Kenji, 4,363,254, Cl. 83-800.000.

Amano, Hiroyuki: *See*—
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.

Amano, Matsuo; Mouri, Yasunori; Abe, Osamu; Suda, Seiji; and Sasayama, Takao, to Hitachi, Ltd. Method for adjusting the supply of fuel to an internal combustion engine for an acceleration condition. 4,363,307, Cl. 123-492.000.

Ambrus, Dezso; Szabolcsi, Tamas; and Hutas, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. 2,2-Dimethyl-1,2-dihydroquinoline derivatives useful as antioxidants. 4,363,910, Cl. 546-172.000.

Amemiya, Yoichi: *See*—
Kohzai, Yoshinori; Amemiya, Yoichi; Fujioka, Yoshiki; and Iwamatsu, Noboru, 4,364,005, Cl. 322-31.000.

American Petro Mart, Inc.: *See*—
Whitney, Solon G.; and Erickson, William R., 4,363,880, Cl. 521-26.000.

AMF Incorporated: *See*—
Sorensen, Egon, 4,363,943, Cl. 200-38.00R.

AMFU Limited: *See*—
Hargreaves, Brian; and Cousens, Alan K., 4,363,847, Cl. 428-283.000.

AMP Incorporated: *See*—
Boutcher, Andrew G., Jr.; and Folk, Kenneth F., 4,363,167, Cl. 29-863.000.

Hoffman, Norman E., 4,363,930, Cl. 174-68.500.
Loose, Winfield W., 4,363,529, Cl. 339-17.00C.
AMSTED Industries Incorporated: *See*—
Kaim, John W., 4,363,414, Cl. 213-147.000.
Mulcahy, Harry W., 4,363,278, Cl. 105-218.00R.
Neumann, Otto W., 4,363,276, Cl. 105-197.00R.
Anderson, Gerald L.; Borders, Harley A.; and Berry, F. Otis, to Institute of Gas Technology. Desulfurization of H_2S containing gas streams with production of elemental sulfur. 4,363,790, Cl. 423-230.000.
Anderson, Nevil J.: *See*—
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,363,749, Cl. 252-455.00R.
Anderson, Richard N., to V. E. Anderson Mfg. Company. Pivoted sash window sash guide and balance lock structure. 4,363,190, Cl. 49-181.000.
Anderson, Robert A., to Lucas Industries Limited. Disc brakes for vehicles. 4,363,382, Cl. 188-71.400.
Anderson, Roger J.: *See*—
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., 4,363,844, Cl. 428-65.000.
Anderson, Stephen W. Method for making large fiberglass structures. 4,363,687, Cl. 156-245.000.
Anderson, Verner: *See*—
Sinclair, Robert I.; Anderson, Verner; Logan, David J.; and Rich, Leonard G., 4,363,330, Cl. 131-105.000.
Andersson, Bror A. E. Deodorizing and disinfecting liquid-absorbing product and process for production thereof. 4,363,322, Cl. 128-290.00R.
Ando, Fumihiko, to Nippon Hoso Kyokai. Solid state photo-electric converting device and solid state imaging apparatus employing it. 4,363,963, Cl. 250-211.00J.
Andresen, Bernhard H.: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.
Andrews, Sydney A., to TRW Inc. Aperture plugs. 4,363,420, Cl. 220-307.000.
Angelus Sanitary Can Machine Company: *See*—
Schindler, Peter V., 4,363,429, Cl. 222-504.000.
Anmin Manufacturing Co., Ltd.: *See*—
Yasue, Kazo, 4,363,688, Cl. 156-251.000.
Anno, Gousuke; and Oozeki, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Thermal recording apparatus. 4,364,063, Cl. 346-76.0PH.
Aoyagi, Yoshiaki: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.
APM, Inc.: *See*—
Loughmiller, Bert E., 4,363,416, Cl. 215-364.000.
Applied Medical Devices, Inc.: *See*—
Altshuler, John H., 4,363,319, Cl. 128-156.000.
Arai, Kenichi: *See*—
Tsuya, Noboru; and Arai, Kenichi, 4,363,769, Cl. 264-85.000.
Arakawa, Akio: *See*—
Suzuki, Hajime; and Arakawa, Akio, 4,364,002, Cl. 318-467.000.
Archer, Michael A., to Jungheinrich Unternehmensverwaltung KG, Firma. Control lever switch. 4,364,047, Cl. 340-870.370.
Armstrong World Industries, Inc.: *See*—
Horst, Robert L., 4,363,271, Cl. 101-181.000.
Arvin Industries, Inc.: *See*—
Dalke, James, 4,364,085, Cl. 358-81.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Imamura, Kazuyoshi; Akimoto, Norio; and Awaya, Shozo, 4,363,853, Cl. 428-480.000.
Asai, Hitohisa. Apparatus for digital division computation. 4,364,115, Cl. 364-765.000.
ASEA Aktiebolag: *See*—
Granstrom, Staffan, 4,363,653, Cl. 75-10.00R.
Atago, Takeshi; and Hasegawa, Taiji, to Hitachi, Ltd. Air-fuel control method and apparatus for internal combustion engine. 4,363,209, Cl. 60-274.000.
Ateliers des Charmilles S.A.: *See*—
Pfau, Jean; and Bonga, Benno I., 4,363,949, Cl. 219-69.00W.
Atlantic Richfield Company: *See*—
Schuh, Frank J., 4,363,568, Cl. 405-227.000.
Atlas Pacific Engineering Company: *See*—
Tichy, Oldrich J.; and Teranchi, Iraj, 4,363,266, Cl. 99-545.000.
Atom S.p.A.: *See*—
Cantella, Emiliano, 4,363,253, Cl. 83-537.000.
Auld, Bertram A., to Leland Stanford Junior University, The Board of Trustees of the. FMR Probe method utilizing main and spurious resonance modes for detecting surface flaws. 4,364,012, Cl. 324-237.000.
Aurit, Dale. Adjustable support rollaway bleacher. 4,363,197, Cl. 52-9.000.
Austen, Alfred R.; and Humphries, Darral V., to Bethlehem Steel Corporation. Apparatus for hydrostatic extrusion of thermoplastic polymers. 4,363,611, Cl. 425-97.000.
Automatic Material Handling, Inc.: *See*—
Keller, Alex J.; Fechner, Erchard A.; and Williams, Joseph R., 4,363,585, Cl. 414-273.000.
AVM Corporation: *See*—
Ludwig, George C., 4,363,309, Cl. 123-552.000.
Avondoglio, Leo. Electrostatic precipitator impactor assembly. 4,363,640, Cl. 55-112.000.
Awaya, Shozo: *See*—
Imamura, Kazuyoshi; Akimoto, Norio; and Awaya, Shozo, 4,363,853, Cl. 428-480.000.
B.T.B. Industria Chimica S.p.A.: *See*—
Viscardi, Renzo, 4,363,920, Cl. 549-72.000.
Babcock & Wilcox Company, The: *See*—
Abbott, Robert L., 4,363,778, Cl. 376-228.000.
Bacher, Stuart; Rosas, Carlos B.; and Sharkey, John J., to Merck & Co., Inc. Catalyst for the preparation of 4-cyanothiazole and process for preparing the catalyst. 4,363,751, Cl. 252-469.000.
Bachman, David L.; Lewis, William C., Jr.; Schultz, Peter C.; and Voorhees, Francis W., to Corning Glass Works. Method of making fused silica-containing material. 4,363,647, Cl. 65-18.200.
Bains, Gurdip S., to Westinghouse Electric Corp. Panel joints. 4,363,201, Cl. 52-584.000.
Baird, John K.: *See*—
Cottrell, Ian W.; Sandford, Paul A.; and Baird, John K., 4,363,669, Cl. 106-205.000.
Baitz, Guenter, to Nixdorf Computer AG. Receptacle for paper currency, coins and the like. 4,363,229, Cl. 70-279.000.
Bakerman, David. Illuminative skate wheel. 4,363,502, Cl. 280-816.000.
Bako, Lazlo: *See*—
Remington, Richard C.; and Bako, Lazlo, 4,363,226, Cl. 70-70.000.
Balaban, Alvin R.: *See*—
Steckler, Steven A.; and Balaban, Alvin R., 4,364,026, Cl. 340-347.0DA.
Baldwin, Mary A.: *See*—
Phipps, Gregory F., 4,364,003, Cl. 318-467.000.
Balz, Gunther W., to Roto-Finish Company, Inc. Vertical self-separating centrifugal finishing apparatus with automatic media return. 4,363,194, Cl. 51-163.100.
Barato, Paolo. Multiple machine for row-cropping with vertically operating axes. 4,363,362, Cl. 172-59.000.
Barrier, Gerard; and Blanc, Jean-Pierre, to Rhone-Poulenc Industries. Novel sand/silicate compositions for foundry molds/cores. 4,363,665, Cl. 106-38.300.
Barry-Wehmiller Company: *See*—
Puskarz, Stanley J., 4,363,339, Cl. 141-39.000.
Bartlett, Joseph E. Replacement valve assembly. 4,363,466, Cl. 251-357.000.
BASF Aktiengesellschaft: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; and Mueller, Franz-Josef, 4,363,925, Cl. 556-415.000.
Hamprecht, Gerhard; and Wuerzer, Bruno, 4,363,651, Cl. 71-88.000.
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,363,710, Cl. 204-181.00C.
Mueller, Herbert; and Huchler, Otto H., 4,363,924, Cl. 549-509.000.
Bastian Belzona Verfahrenstechnik, Wolfgang Bastian: *See*—
Tietgen, Hans P.; and Riese, Gunter, 4,363,283, Cl. 114-201.00R.
Baues, Peter, to Siemens Aktiengesellschaft. Optical device for non-contact recording. 4,364,064, Cl. 346-107.00R.
Baumgartner, Heinrich, to BBS-Kraftfahrzeugtechnik GmbH. Motor vehicle wheel. 4,363,347, Cl. 152-411.000.
Baumgartner Papiers S.A.: *See*—
Vulliens, Philippe; and Siggen, Guy, 4,363,235, Cl. 73-38.000.
Baxter Travenol Laboratories, Inc.: *See*—
Achter, Eugene K.; Kremen, Jerome C.; Rodriguez, Rodolfo R.; and Priarone, Paolo, 4,363,551, Cl. 356-338.000.
Bayer Aktiengesellschaft: *See*—
Heine, Hans-Georg; Knops, Hans-Joachim; and Priesnitz, Uwe, 4,363,926, Cl. 556-442.000.
Komarek, Ernst, 4,363,686, Cl. 156-242.000.
Bays, Marvin J. Auto body protector. 4,363,507, Cl. 293-128.000.
BBC Brown, Boveri & Company, Limited: *See*—
Joho, Reinhard; and Pohl, Herbert, 4,363,986, Cl. 310-214.000.
BBS-Kraftfahrzeugtechnik GmbH: *See*—
Baumgartner, Heinrich, 4,363,347, Cl. 152-411.000.
Beattie, Jay E., to Saskatchewan Power Corporation. Direct current power supply. 4,363,975, Cl. 307-150.000.
Becke, Hans W.; and Wheatley, Carl F., Jr., to RCA Corporation. Power MOSFET with an anode region. 4,364,073, Cl. 357-23.000.
Beckerer, Frank S. Self-draining boat window. 4,363,350, Cl. 160-92.000.
Beckwith, Ivan E.: *See*—
Creel, Theodore R., Jr.; and Beckwith, Ivan E., 4,363,237, Cl. 73-147.000.
Beckwith, Robert W. Method and apparatus for providing signals from LTC transformer to electrical devices. 4,363,974, Cl. 307-40.000.
Bedford Limited: *See*—
Rennison, Stuart C.; and Stacey, Ronald J., 4,363,866, Cl. 430-290.000.
Beecham Group Limited: *See*—
Evans, John M.; Showell, Graham A.; and Fake, Charles S., 4,363,811, Cl. 424-267.000.
Behling, Roy A.: *See*—
Blair, Gilbert; Behling, Roy A.; and Collins, Richard, 4,363,411, Cl. 212-191.000.
Bell & Howell Company: *See*—
Flint, John R.; Hendrikson, Kenneth L.; and Rabindran, K. George, 4,363,457, Cl. 242-203.000.
Bell, John H., to Boeing Company, The. Self-retaining close tolerance bushing. 4,363,580, Cl. 411-15.000.

Bell Telephone Laboratories, Incorporated: *See*—
Chandross, Edwin A.; and Hartless, Ray L., 4,363,867, Cl. 430-302.000.
Eichenbaum, Bernard R., 4,363,827, Cl. 427-8.000.
Ohm, Edward A., 4,364,052, Cl. 343-781.00P.

Bellatty, Thomas A.; Zadik, Joseph S.; and Mast, Richard. Monitoring system for movement of tunnels and other structures. 4,364,034, Cl. 340-690.000.

Bellegarde, Bernard, to Boehringer Ingelheim GmbH. Process for the preparation of sulfur-containing N-benzyl-amino acids and esters. 4,363,766, Cl. 260-455.00R.

Belliveau, Raymond E.; and Larkin, Simon J., to Walter Kidde & Co. Continuous strip cold detector. 4,363,556, Cl. 374-183.000.

Belov, Petr S.: *See*—
Rozovsky, Alexandr Y.; Stytsenko, Valentin D.; Nizova, Svetlana A.; Belov, Petr S.; and Dyakonov, Alexandr J., 4,363,750, Cl. 252-459.000.

Benbow, Eugene C.: *See*—
Halstead, Kenneth G.; and Benbow, Eugene C., 4,364,009, Cl. 324-116.000.

Bendix Corporation, The: *See*—
Roberts, James K., 4,363,387, Cl. 188-333.000.

Bennett, Willard H. Production and utilization of ion cluster acceleration. 4,363,774, Cl. 376-105.000.

Berg, Lloyd. Separation of toluene from non-aromatic hydrocarbons by extractive distillation. 4,363,704, Cl. 203-58.000.

Bergersen, Hans A., to International Standard Electric Corporation. Electrical heating element. 4,363,947, Cl. 219-528.000.

Berglund, Neil C.: *See*—
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, Neil C., 4,364,075, Cl. 357-23.000.

Bergstrom, Karl O.; Ulmius, Jan; and Wenngren, Bo L. T., to Aktiebolaget Draco. Pharmaceutical composition. 4,363,806, Cl. 424-241.000.

Berkus, Clyde C., to Building Components, Inc. Mounting bracket for pedestrian crossing switch and sign. 4,363,182, Cl. 40-607.000.

Berlex Laboratories, Inc.: *See*—
Diamond, Julius; and Wohl, Ronald A., 4,363,808, Cl. 424-248.510.

Berry, F. Otis: *See*—
Anderson, Gerald L.; Borders, Harley A.; and Berry, F. Otis, 4,363,790, Cl. 423-230.000.

Bertelli, Guido: *See*—
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, 4,363,906, Cl. 528-248.000.

Bertelsbeck, Helmu, to Daimler-Benz Aktiengesellschaft. Electrically driven rail or track bound vehicle. 4,363,940, Cl. 191-59.100.

Bertolacini, Ralph J.: *See*—
Hirschberg, Eugene H.; Bertolacini, Ralph J.; and Modica, Frank S., 4,363,720, Cl. 208-120.000.

Bethlehem Steel Corporation: *See*—
Austen, Alfred R.; and Humphries, Darral V., 4,363,611, Cl. 425-97.000.

Betzold, Edward R.: *See*—
Harris, Robert M.; and Betzold, Edward R., 4,363,257, Cl. 89-1.802.

Biddlecom, William G., to Miles Laboratories, Inc. Enol acylate analogs of E_1 and E_2 prostaglandins. 4,363,817, Cl. 424-311.000.

Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, to Geze GmbH. Cross country ski binding. 4,363,498, Cl. 280-615.000.

Biggs, Robert D.: *See*—
Gibbs, Marylu B.; Biggs, Robert D.; and Alsgaard, David W., 4,363,792, Cl. 423-335.000.

Billig, Ernst; Bryant, David R.; and Jamerson, Jackie D., to Union Carbide Corporation. Preparation of rhodium complex compounds. 4,363,764, Cl. 260-429.00R.

Bindon, Jeffery P., to Roecar Holdings (Netherlands Antilles). Electrolytic halogen generators. 4,363,713, Cl. 204-278.000.

Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., to Imperial Chemical Industries Limited. Cementitious composition and cement produced therefrom. 4,363,667, Cl. 106-90.000.

Bird, Carlton A.: *See*—
Ury, Frank; Propheter, Howard L.; and Bird, Carlton A., 4,363,270, Cl. 101-180.000.

Birds, George J., Jr. Ore concentrator. 4,363,726, Cl. 209-436.000.

Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, to Siemens Aktiengesellschaft. Device for galvanic precipitation of aluminum. 4,363,712, Cl. 204-199.000.

Bittar, Joseph, to Otis Elevator Company. Relative system response elevator call assignments. 4,363,381, Cl. 187-29.00R.

Bjurling, Anders, to Dynatrans AB. Method of emptying a powder or like material out of a container. 4,363,574, Cl. 406-114.000.

Blaak, Cornelis, to Stork Brabant B.V. Method and apparatus for coating a porous substratum. 4,363,833, Cl. 427-211.000.

Black Clawson Company, The: *See*—
Markham, Larry D.; and Eklund, Henrik J., 4,363,697, Cl. 162-19.000.

Black & Decker Inc.: *See*—
Cuneo, Giuseppe, 4,363,343, Cl. 145-4.000.

Blair, Gilbert; Behling, Roy A.; and Collins, Richard, to Dravo Corporation. Hammerhead crane with plural shuttle trolleys, a load trolley and movable counterweight means. 4,363,411, Cl. 212-191.000.

Blanc, Jean-Pierre: *See*—
Barrier, Gerard; and Blanc, Jean-Pierre, 4,363,665, Cl. 106-38.300.

Blanding, Wendell S.: *See*—
Allaire, Roger A.; and Blanding, Wendell S., 4,363,648, Cl. 65-42.000.

Blau, Monte; and Kung, Hank F., to State University of New York. Diagnostic radiopharmaceuticals for localization in target tissues exhibiting a regional pH shift relative to surrounding tissues. 4,363,793, Cl. 424-1.000.

Blazek, Christopher F.: *See*—
ElDifrawi, Ahmed A.; Blazek, Christopher F.; and Yudow, Bernard D., 4,363,703, Cl. 203-10.000.

Block, Jacob, to W. R. Grace & Co. Fluid loss control system. 4,363,736, Cl. 252-8.50A.

Bloeck, Siegfried; and Luthi, Rudolf, to Swiss Aluminium Ltd. Process for the manufacture of rings for lids for cans. 4,363,582, Cl. 413-12.000.

Blohm & Voss AG: *See*—
Sprengel, Ernst-Helmuth, 4,363,410, Cl. 212-190.000.

Bloomfield, Edward J.; and Snelgrove, Brian, to Ransome Hoffmann Pollard Ltd. Mechanical assemblies employing sensing means for sensing motion or position. 4,364,011, Cl. 324-174.000.

Boch, Iris: *See*—
Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, 4,363,757, Cl. 252-628.000.

Bocharov, Valentin B.: *See*—
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.

Boehringer Ingelheim GmbH: *See*—
Bellegarde, Bernard, 4,363,766, Cl. 260-455.00R.
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; and Traunecker, Werner, 4,363,814, Cl. 424-272.000.

Boeing Company, The: *See*—
Bell, John H., 4,363,580, Cl. 411-15.000.
Robinson, Curtiss W.; and Raymond, Eugene T., 4,363,211, Cl. 60-476.000.

Boettcher, William C., to D.O.V.E. Equipment Corporation. Helical vending machine with expansible divider. 4,363,422, Cl. 221-75.000.

Bogdanov, Nikolai A.: *See*—
Shushlebin, Boris A.; Bogdanov, Nikolai A.; Tregubenko, Viktor V.; Subbotin, Nikolai I.; and Galkin, Mikhail V., 4,363,658, Cl. 75-84.000.

Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Chemiluminescent-labeled haptens and antigens. 4,363,759, Cl. 260-112.700.

Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, Neil C., to Intel Corporation. CMOS Dynamic RAM cell and method of fabrication. 4,364,075, Cl. 357-23.000.

Boise Cascade Corporation: *See*—
Westphal, Teddy M., 4,363,404, Cl. 206-508.000.

Bolender, Walter, to ER-WE-PA Maschinenfabrik u. Eisengiesserei GmbH. Drivable roll of controllable flexure, particularly for machines for the production and processing of webs of paper or plastic. 4,363,615, Cl. 425-363.000.

Bollen, Theo P. C., to Electro-Nite Co. Paper thermocouple body. 4,363,929, Cl. 136-234.000.

Bone, Rainer: *See*—
Honig, Gunter; Braunger, Joachim; Krauter, Imanuel; and Bone, Rainer, 4,363,979, Cl. 307-519.000.

Bonga, Benno I.: *See*—
Pfau, Jean; and Bonga, Benno I., 4,363,949, Cl. 219-69.00W.

Bonifacio, Filippo, to Celeste Carrer. Fuel purifier. 4,363,727, Cl. 210-96.100.

Bonnell, Alfred, Jr.: *See*—
Patel, Ramesh P.; and Bonnell, Alfred, Jr., 4,363,412, Cl. 212-196.000.

Bonniwell, Joel C.; and Ocheltree, William A., to Cragar Industries Inc. Wheel disc offset attachment to wheel rim. 4,363,521, Cl. 301-63.00R.

Bontrager, Jacob. Hay bale loader. 4,363,583, Cl. 414-24.500.

Boon, John R.; and Wagner, Gregory J., to Minnesota Mining and Manufacturing Company. Photographic contrast enhancers. 4,363,873, Cl. 430-546.000.

Borden, Inc.: *See*—
Gould, Joseph C., 4,363,741, Cl. 252-142.000.

Borders, Harley A.: *See*—
Anderson, Gerald L.; Borders, Harley A.; and Berry, F. Otis, 4,363,790, Cl. 423-230.000.

Borg-Warner Corporation: *See*—
Mulders, Jan A., 4,363,608, Cl. 417-424.000.

Borgren, Peter M., to Hydrodynamic Energy Systems Corporation. Water power generator. 4,363,564, Cl. 405-77.000.

Boros, Leslie A. Style convertible footwear. 4,363,177, Cl. 36-101.000.

Bos, Andre, to Technal International. Fastening devices for guardrails. 4,363,467, Cl. 256-68.000.

Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, to Societe Francaise d'Electrometallurgie Sofrem. Process for obtaining manganese- and silicon-based alloys by silico-thermal means in a ladle. 4,363,657, Cl. 75-80.000.

Bosshardt, William: *See*—
Jargiello, Paul; and Bosshardt, William, 4,363,176, Cl. 34-4.000.

Boston, Farwell C.: *See*—
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,363,791, Cl. 423-243.000.

Bouiller, Jean G.; Pous, Jacques A. J.; and Joubert, Raymond J. M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Thrust-vectoring nozzle for jet propulsion system. 4,363,445, Cl. 239-265.350.

Bouillet, Edmond: *See*—
DeCeuster, Jean; Essemaeker, Paul; Bouillet, Edmond; Decamps, Alain; and Ledoux, Pierre, 4,363,699, Cl. 162-71.000.
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, to Societe Anonyme dite: L'Oreal. Cosmetic compositions for hardening soft brittle nails. 4,363,796, Cl. 424-61.000.
Bouldin, Eric W., to Drexler Technology Corporation. Method for making a reflective laser recording and data storage medium with a dark underlayer. 4,363,870, Cl. 430-510.000.
Boulogne, Jean: *See*—
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, 4,363,796, Cl. 424-61.000.
Bourbeau, Frank J. Self-controlled polyphase synchronous motor drive system. 4,364,004, Cl. 318-721.000.
Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel, to Elf France. Process for improving the stability of catalysts for the catalytic hydrotreatment of petroleum cuts. 4,363,719, Cl. 208-111.000.
Boutcher, Andrew G., Jr.; and Folk, Kenneth F., to AMP Incorporated. Method of terminating leading ends of a plurality of wires. 4,363,167, Cl. 29-863.000.
Bouvet, Pierre E.; and Suzor, Norland L. C., to Davies Hamakua Sugar Company, a division of Theo. H. Davies & Co., Ltd. Process to increase the effectiveness of bagasse as a source of energy. 4,363,636, Cl. 44-10.00A.
Boyer, William: *See*—
Panzer, George W.; and Boyer, William, 4,363,724, Cl. 209-166.000.
Boyle, William G.: *See*—
Taylor, Donald F.; and Boyle, William G., 4,363,359, Cl. 166-214.000.
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, to Degussa Aktiengesellschaft. Mechanically stable screen cloth construction made of metal. 4,363,753, Cl. 252-477.00R.
Braly, Douglas E.; and Stein, James A. Thrust support for bicycle seats. 4,363,516, Cl. 297-195.000.
Brandly, Ernest B. Movable head engine. 4,363,295, Cl. 123-51.0AA.
Branson Ultrasonics Corporation: *See*—
Holze, Ernest P., Jr., 4,363,992, Cl. 310-323.000.
Braunger, Joachim: *See*—
Honig, Gunter; Braunger, Joachim; Krauter, Imanuel; and Bone, Rainer, 4,363,979, Cl. 307-519.000.
Breslow, Jeffrey D.; Harper, Rex M.; and Glickson, David A., to Marvin Glass & Associates. Electronic table tennis game apparatus. 4,363,484, Cl. 273-85.00G.
Brinkmann & Niemeyer N.V.: *See*—
Harmsen, Jan H., 4,363,291, Cl. 119-51.00R.
Brisabois, Roger, to Regie Nationale des Usines Renault. Transmission differential gear. 4,363,248, Cl. 74-713.000.
Bristol, Robert D. Crankless internal combustion engine. 4,363,299, Cl. 123-197.0AB.
British-American Tobacco Company Limited: *See*—
Matkin, David A., 4,363,333, Cl. 131-334.000.
British Broadcasting Corporation: *See*—
Storey, Richard; and Roberts, Alan, 4,364,087, Cl. 358-105.000.
Broach, George C., to G. C. Broach Company, The. Combustion control system. 4,363,440, Cl. 236-20.00R.
Broberg, Dewey O., Jr., to Du-Bro Products. Propeller spinner for model airplanes or the like. 4,363,604, Cl. 416-245.00R.
Brock Manufacturing, Inc.: *See*—
Kruger, Joseph A., 4,363,428, Cl. 222-227.000.
Brockmeyer, Hans P., to Westfalische Metall Industrie KG Hueck & Co. Vehicle lamp with a lamp carrier made from a sheet metal blank. 4,364,101, Cl. 362-80.000.
Brodsky, Marc H.; and Scott, Bruce A., to International Business Machines Corp. Method for depositing silicon films and related materials by a glow discharge in a disiland or higher order silane gas. 4,363,828, Cl. 427-39.000.
Broemer, Heinz; and Meinert, Norbert, to Ernst Leitz Wetzlar GmbH. Alkaline fluoroborate in fluorophosphate glass free of beryllium. 4,363,879, Cl. 501-44.000.
Bronicki, Lucien. Lubricating system for organic fluid power plant. 4,363,216, Cl. 60-657.000.
Broodman, Johannus J., to B.V. Koninklijke Maatschappij "De Schelde". Method for producing a tube for a cracking plant. 4,363,435, Cl. 228-131.000.
Broucek, Daniel M. Watertight cast cover. 4,363,317, Cl. 128-82.000.
Brown, Albert M. Liquid filling machine. 4,363,338, Cl. 141-2.000.
Brown, Leon C.; Campbell, Jesse L.; Fitts, Uscoe J.; and Gudgel, Willard L., to International Business Machines Corporation. Electromechanically operated fuser roll closure. 4,363,549, Cl. 355-3.0FU.
Bruks Mekaniska AB: *See*—
Tannerstal, Harding, 4,363,342, Cl. 144-2.00R.
Bruna, Bernhard, to AKG Akustische u.Kino-Gerate Gesellschaft m.b.H. Sound inlet for microphones. 4,363,937, Cl. 179-121.00R.
Brundage, Ruth P.: *See*—
Lesher, George Y.; and Brundage, Ruth P., 4,363,911, Cl. 546-257.000.
Brune, Heinz. Casings for heat exchangers and burner/recuperator assemblies incorporating such casings. 4,363,623, Cl. 432-219.000.
Brunelle, Daniel J., to General Electric Company. Polycarbonate transesterification from bis(ortho-nitroaryl)carbonate. 4,363,905, Cl. 528-196.000.
Bruns, Klaus: *See*—
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, 4,363,754, Cl. 252-522.00R.
Brush, Gary T. Piano action magnetic tape recording process and apparatus for player piano playback. 4,363,255, Cl. 84-1.030.
Bryant, David R.: *See*—
Billig, Ernst; Bryant, David R.; and Jamerson, Jackie D., 4,363,764, Cl. 260-429.00R.
Bryer, James E.; Mayes, Alan P.; and Allen, Keith, to VO Offshore Ltd. Method of forming an electrical connection underwater. 4,363,168, Cl. 29-869.000.
BS&B Safety Systems, Inc.: *See*—
Matz, Duane G., 4,363,418, Cl. 220-89.00A.
Bucher, Jean-Philippe: *See*—
Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, 4,363,657, Cl. 75-80.000.
Buck, George S., Jr.; and Russell, Roger V., to Fiberlok Inc. Process for contacting a powder with a fibrous web. 4,363,680, Cl. 156-62.600.
Buckler, Sheldon A.; Burns, Jeffrey B.; Kniazzeh, Alfredo G.; Plasse, Paul A.; and Sullivan, David J., to Polaroid Corporation. Method and system for testing and sorting batteries. 4,363,407, Cl. 209-3.300.
Bucklew, Leonard E.: *See*—
Rozwadowski, Boleslaw; and Bucklew, Leonard E., 4,363,589, Cl. 414-415.000.
Buczak, Stanley D.: *See*—
Poirier, Victor L.; Buczak, Stanley D.; Lynch, Robert F.; and Salvo, Thomas R., 4,363,328, Cl. 128-728.000.
Budden, Kenneth J.: *See*—
Williams, Richard E.; and Budden, Kenneth J., 4,363,378, Cl. 182-93.000.
Buffum, Richard J. Carrier for skates. 4,363,514, Cl. 294-162.000.
Building Components, Inc.: *See*—
Berkus, Clyde C., 4,363,182, Cl. 40-607.000.
Burke, Edward F., Jr., to MFE Corporation. Limited rotation device having two degrees of freedom. 4,364,000, Cl. 318-128.000.
Burns, Jeffrey B.: *See*—
Buckler, Sheldon A.; Burns, Jeffrey B.; Kniazzeh, Alfredo G.; Plasse, Paul A.; and Sullivan, David J., 4,363,407, Cl. 209-3.300.
Burroughs Wellcome Co.: *See*—
Wilkinson, Samuel, 4,363,800, Cl. 424-177.000.
Burst, Hermann; and Macho, Leo, to Dr. Ing. h.c.F. Porsche A.G. Cover for passenger car trunks. 4,363,510, Cl. 296-37.160.
Burton, Andrew F. Adjustable spectacles. 4,363,537, Cl. 351-90.000.
Busemann, Eduard, to Hoesch Werke Aktiengesellschaft. Inductor for inductively heating raceways of antifriction bearing rings. 4,363,946, Cl. 219-10.590.
Bussard, Robert W.; and Coppi, Bruno, to International Nuclear Energy Systems Co. Controlled nuclear fusion apparatus. 4,363,775, Cl. 376-133.000.
B.V. Koninklijke Maatschappij "De Schelde": *See*—
Broodman, Johannus J., 4,363,435, Cl. 228-131.000.
BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschrankter Haftung: *See*—
Senn-Bilfinger, Jorg, 4,363,816, Cl. 424-274.000.
C. Delachaux: *See*—
Oger, Rene, 4,363,939, Cl. 191-43.000.
C. Reichert Optische Werke, AG: *See*—
Sitte, Hellmuth, 4,363,783, Cl. 422-68.000.
Cabot Corporation: *See*—
Hickl, Anthony J., 4,363,659, Cl. 420-454.000.
Cadbury Schweppes PCL: *See*—
Holben, Clair D.; and Jeans, Edward L., 4,363,424, Cl. 222-4.000.
Caesar, Michael B.: *See*—
Adams, Allen S.; and Caesar, Michael B., 4,363,786, Cl. 422-189.000.
Cain, Robert L., to Robinair Manufacturing Corporation. Environmental protection refrigerant disposal and charging system. 4,363,222, Cl. 62-292.000.
Cal Detect, Inc.: *See*—
Hutson, Donald G., 4,363,635, Cl. 436-132.000.
Caldera, Joseph B. Bolt hole locating and marking tool. 4,363,173, Cl. 33-180.00R.
Callahan, Wayne B. Intraocular lens. 4,363,143, Cl. 3-13.000.
Campbell, Jesse L.: *See*—
Brown, Leon C.; Campbell, Jesse L.; Fitts, Uscoe J.; and Gudgel, Willard L., 4,363,549, Cl. 355-3.0FU.
Canada, Atomic Energy of, Limited: *See*—
Allan, Colin J.; and McIntyre, Ian L., 4,363,970, Cl. 250-390.000.
Cannella, Vincent D.; and McCormick-Goodhart, Mark H., to Energy Conversion Devices, Inc. Heat-sink imaging apparatus for live skin tissue using pulsed energy source. 4,363,691, Cl. 156-350.000.
Canon Kabushiki Kaisha: *See*—
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, 4,363,861, Cl. 430-97.000.
Nemoto, Takayuki; and Takimoto, Hiroyuki, 4,363,544, Cl. 354-60.00R.
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.
Canron Corporation: *See*—
Lund, Raymond R., 4,363,274, Cl. 104-2.000.
Cantella, Emiliano, to Atom S.p.A. Automatic hollow punch research device and relevant control, for die-cutting machines, particularly for footwear production. 4,363,253, Cl. 83-537.000.
Capitol Records, Inc.: *See*—
Hunyar, Csaba K.; and Hand, Gary A., 4,363,705, Cl. 204-5.000.
Capshew, Charles E., to Phillips Petroleum Company. Composition of matter and method of preparing same, catalyst, method of producing

the catalyst and polymerization process employing the catalyst. 4,363,746, Cl. 252-429.00B.
Carava, Sam S. Ink tub cleaner. 4,363,153, Cl. 15-101.000.
Carl Freudenberg, Firma: *See*—
Hartmann, Ludwig, 4,363,845, Cl. 428-198.000.
Carl Zeiss-Stiftung: *See*—
Weber, Klaus, 4,363,532, Cl. 350-523.000.
Carlin, William G.: *See*—
Pinckley, Marion E.; and Carlin, William G., 4,363,262, Cl. 99-290.000.
Carlson, John L., to Jeno's Inc. Method and apparatus for cutting bread. 4,363,251, Cl. 83-105.000.
Carpco, Inc.: *See*—
Knoll, Frank S.; Taylor, Joseph B.; and Hoyles, Peter J., 4,363,723, Cl. 209-128.000.
Carr, Susan H.; Schobert, Monique A.; and Taylor, John J., to Western Electric Co., Inc.; and Nassau Recycle Corporation. Process for reclaiming jelly-filled telecommunication cables. 4,363,449, Cl. 241-21.000.
Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,363,759, Cl. 260-112.700.
Carroll, Joseph W., to Kim Manufacturing Company. Television stand. 4,363,460, Cl. 248-415.000.
Caserta, Richard E.: *See*—
Guglielmi, William P.; and Caserta, Richard E., 4,363,728, Cl. 210-205.000.
Casimir, Donald J.: *See*—
Lang, Timothy R.; and Casimir, Donald J., 4,363,264, Cl. 99-510.000.
Castera, Jean P.; and Dupont, Jean M., to Thomson-CSF. Magnetic transducer comprising a strained magnetic wire in a sheath of non-magnetic material. 4,364,013, Cl. 324-260.000.
Castoro, Richard J.: *See*—
Huppert, Vaughn P.; and Castoro, Richard J., 4,364,102, Cl. 362-123.000.
Catallo, Frank. Method and apparatus for the compressive treatment of fabric. 4,363,161, Cl. 26-18.600.
Caterpillar Tractor Co.: *See*—
Kaveney, John R., Jr., 4,363,231, Cl. 70-484.000.
Noe, Stephen L., 4,363,468, Cl. 266-76.000.
Celeste Carrer: *See*—
Bonifacio, Filippo, 4,363,727, Cl. 210-96.100.
Cellofoam A.G.: *See*—
Smith, Stuart B., 4,363,881, Cl. 521-56.000.
Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See*—
Ponghis, Nikolas; and Masuy, Jean-Marie, 4,363,656, Cl. 75-42.000.
Cerberus AG: *See*—
Scheidweiler, Andreas; and Muller, Peter, 4,364,031, Cl. 340-629.000.
Cerrato, Vincent J., to Vending Components, Inc. Keg-tapping structure. 4,363,336, Cl. 137-212.000.
Champion International Corporation: *See*—
Snow, John E., 4,363,841, Cl. 428-35.000.
Chandross, Edwin A.; and Hartless, Ray L., to Bell Telephone Laboratories, Incorporated. Process of imaging using an indanone containing material. 4,363,867, Cl. 430-302.000.
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., to Texas Instruments Incorporated. Co-planar well-type charge coupled device with enhanced storage capacity and reduced leakage current. 4,364,076, Cl. 357-24.000.
Chatterjee, Shyam S.: *See*—
Klessing, Klaus; Chatterjee, Shyam S.; and Gabard, Bernard L., 4,363,805, Cl. 424-230.000.
Chattha, Mohinder S., to Ford Motor Company. Composition with latent reactive catalyst-4. 4,363,896, Cl. 525-110.000.
Chaudhry, Jagdish C.; and Chaudhry, Lorena. Electronic gaming apparatus. 4,363,486, Cl. 273-143.00B.
Chaudhry, Lorena: *See*—
Chaudhry, Jagdish C.; and Chaudhry, Lorena, 4,363,486, Cl. 273-143.00B.
CHEMIMAS Vegyigep Tervezo es Fovallalkozo Vallalat: *See*—
Nagy, Egon, 4,363,452, Cl. 241-91.000.
Chen, Nai Y.: *See*—
Pelrine, Bruce P.; Chen, Nai Y.; and Yan, Tsoung Y., 4,363,717, Cl. 208-108.000.
Cheo, Peter K., to Electric Power Research Institute, Inc. Detection system for distinguishing between voids and foreign particles in materials and method. 4,363,966, Cl. 250-339.000.
Chiang, Alice M., to United States of America, Air Force. P+N Gallium phosphide photodiodes. 4,364,077, Cl. 357-30.000.
Chiba, Ryuichi: *See*—
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.
Chiba, Toshiyuki: *See*—
Takaya, Takao; Masugi, Takashi; and Chiba, Toshiyuki, 4,363,807, Cl. 424-246.000.
Chicago Rawhide Manufacturing Company: *See*—
Reichenbach, Jerry D.; and Christiansen, Keith W., 4,363,595, Cl. 414-749.000.
Chiku, Kiyoshi: *See*—
Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, 4,363,649, Cl. 65-158.000.
Childs, John M. Sash portlight for marine use. 4,363,349, Cl. 160-90.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Ambrus, Dezso; Szabolcsi, Tamas; and Hutas, Istvan, 4,363,910, Cl. 546-172.000.
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyuml/o/rgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,363,876, Cl. 435-253.000.
Chion, Pierre; Menault, Jacques; and Rodier, Henry, to Rhone-Poulenc-Textile. Solutions, which can be shaped, from mixtures of cellulose and polyamide-imide, and shaped articles obtained. 4,363,895, Cl. 525-54.210.
Chisso Corporation: *See*—
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, 4,363,901, Cl. 526-97.000.
Chittenden, Richard M., to Abbott Laboratories. I.V. Administration flow rate gauge. 4,363,321, Cl. 128-214.00R.
Chiyoda Chem. Engineering & Construction Co.: *See*—
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.
Chodak, Jan B.; and Tran, Luan G., to Mattel, Inc. Electronic stock market terminal game. 4,363,489, Cl. 273-237.000.
Christ, Klaus H.: *See*—
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Christ, Klaus H., 4,363,983, Cl. 310-68.00R.
Christain, Ronald W.; Pommerening, Uwe A.; Russell, Stanley L.; Slingsby, Barry; and West, Julian W., to Stromberg-Carlson Corporation. Telephone network including common equipment with message information and control information circuits for connecting to stations having multifunction telephones. 4,363,936, Cl. 179-18.00E.
Christian, Albert, heir: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.
Christian, David A., heir: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.
Christian, John D., deceased: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.
Christian, Martha R., heir: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.
Christiansen, Keith W.: *See*—
Reichenbach, Jerry D.; and Christiansen, Keith W., 4,363,595, Cl. 414-749.000.
Christiansen, Torben F., to Radiometer A/S. Reference liquid. 4,363,633, Cl. 436-19.000.
Christie, Eugene P. Dispensing carton for plastic grocery bags. 4,363,405, Cl. 206-554.000.
Christner, James E.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,363,759, Cl. 260-112.700.
Chujo, Takafumi: *See*—
Tsuda, Toshitaka; Murano, Kazuo; Yamaguchi, Kazuo; Chujo, Takafumi; Murakami, Norio; and Takahashi, Motohide, 4,363,977, Cl. 307-358.000.
Chvojcsek, Frank: *See*—
Fowler, Paul J.; and Chvojcsek, Frank, 4,363,557, Cl. 400-91.000.
Chwang, Ronald J. C.: *See*—
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, Neil C., 4,364,075, Cl. 357-23.000.
Ciba-Geigy Corporation: *See*—
Dingwall, John G.; and Tuck, Brian, 4,363,923, Cl. 549-329.000.
Fischer, Walter; Kvita, Vratislav; and Zweifel, Hans, 4,363,917, Cl. 548-480.000.
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, to Montedison S.p.A. Condensation product prepared from N,N'-ethylene-urea and formaldehyde. 4,363,906, Cl. 528-248.000.
Cincinnati Milacron - Heald Corp.: *See*—
Uhtenwoldt, Herbert R., 4,363,195, Cl. 51-165.770.
Uhtenwoldt, Herbert R., 4,363,196, Cl. 51-291.000.
Cioca, Gheorghe, to Seton Company. Partially hydrolyzed elastin from limed hide trimmings. 4,363,760, Cl. 260-123.700.
Clarion Co., Ltd.: *See*—
Shiun, Toshimi; and Fujii, Hideo, 4,364,042, Cl. 340-825.040.
Clark, Justin S., to Intermountain Health Care. Cyclic injection method for continuous measurements of pulmonary parameters. 4,363,327, Cl. 128-719.000.
Clark, R. Donald; and Pridgen, Herman S., to Eastman Kodak Company. Preparation of 2-aminobenzothiazoles. 4,363,913, Cl. 548-164.000.
Cline, Larry D.; Hauser, Ambrose A.; Sidenstick, James E.; and Zlatic, Mark S., to General Electric Company. Clearance control. 4,363,599, Cl. 415-136.000.
Clyde Corporation: *See*—
Ginther, Gary D.; and MacDonald, Murdo A., 4,363,573, Cl. 406-76.000.
Coca-Cola Company, The: *See*—
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, 4,363,849, Cl. 428-318.800.
Coker, Guy C., to General Foods Corporation. Process for making a coconut product. 4,363,825, Cl. 426-617.000.

Cole, Peter H.; Eshraghian, Kamran; and Roy, Ashim K., to University of Adelaide, The. Efficient object identification system. 4,364,043, Cl. 340-825.540.

Coles Cranes Limited: *See—*
Gyomrey, Kari M., 4,363,413, Cl. 212-262.000.

Collins, Richard: *See—*
Blair, Gilbert; Behling, Roy A.; and Collins, Richard, 4,363,411, Cl. 212-191.000.

Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D., 4,363,509, Cl. 294-82.00R.

Combustion Engineering, Inc.: *See—*
Kuhlman, Harry S.; and Wyvill, Jeffrey R., III, 4,363,972, Cl. 250-430.000.
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., 4,363,698, Cl. 162-30.100.
Tedder, Joseph A., 4,363,592, Cl. 414-590.000.

Commissariat a l'Energie Atomique: *See—*
Fajeau, Maurice, 4,363,779, Cl. 376-282.000.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Lang, Timothy R.; and Casimir, Donald J., 4,363,264, Cl. 99-510.000.

Commonwealth Scientific & Industrial Research Organization: *See—*
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,363,749, Cl. 252-455.00R.

Compagnie des Montres Longines Francillon S.A.: *See—*
Thomi, Michel; and Studer, Raymond, 4,363,553, Cl. 368-140.000.

Compagnie Francaise de Raffinage: *See—*
Engelhard, Philippe; and Szabo, Georges, 4,363,721, Cl. 208-139.000.

Conchemco Incorporated: *See—*
Schmitt, Larry D., 4,363,206, Cl. 56-11.300.

Concord Laboratories, Inc.: *See—*
Raitto, Russell G., 4,363,329, Cl. 128-765.000.

Condon, Larry J. Heater using hot waste flue gases. 4,363,442, Cl. 237-55.000.

Connell, James, to J. Connell Associates. Wheel cover retention. 4,363,520, Cl. 301-37.00P.

Connor, Charlie. Mail box. 4,363,438, Cl. 232-30.000.

Conoco Inc.: *See—*
Morton, Arthur W., 4,363,566, Cl. 405-169.000.
Yoon, Heeyoung, 4,363,787, Cl. 422-201.000.

Conrad, Jens; Bruns, Klaus; and Upadek, Horst, to Henkel Kommanditgesellschaft auf Aktien. 4 (5)-Acetyl-9,9-dimethyltricyclo-[4,4,0,$1^{8,10}$]-undec-1-ene, its preparation and use in perfumery compositions and as an odorant. 4,363,754, Cl. 252-522.00R.

Considine, Robert J., to Du Pont de Nemours, E. I., and Company. Static mixer. 4,363,552, Cl. 366-340.000.

Construction Products Research and Development Corporation: *See—*
Goldenberg, Joseph, 4,363,200, Cl. 52-251.000.

Container Corporation of America: *See—*
Lewis, Phillip W., 4,363,400, Cl. 206-44.00R.

Continental Scale Corporation: *See—*
Hutchinson, William Y., 4,363,371, Cl. 177-262.000.

Cooper, Jamshed R.: *See—*
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,363,609, Cl. 417-477.000.

Copithorne, Alton R.: *See—*
Ewing, Malcolm M.; and Copithorne, Alton R., 4,363,287, Cl. 118-50.000.

Coppi, Bruno: *See—*
Bussard, Robert W.; and Coppi, Bruno, 4,363,775, Cl. 376-133.000.

Corning Glass Works: *See—*
Allaire, Roger A.; and Blanding, Wendell S., 4,363,648, Cl. 65-42.000.
Bachman, David L.; Lewis, William C., Jr.; Schultz, Peter C.; and Voorhees, Francis W., 4,363,647, Cl. 65-18.200.

Cornu, Bernard; and Pierrey, Jean-Louis, to Novatome. Closure element for limiting the convection currents in an annular space about a nuclear reactor component. 4,363,777, Cl. 376-203.000.

Correale, James V. Football helmet face guard. 4,363,140, Cl. 2-9.000.

Cortorillo, Salvatore F.; Demas, Nickolas P.; and Schwickert, Russell C. Halogen lamp with strap-type bulb support mechanism. 4,363,994, Cl. 313-113.000.

Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., to Renal Systems, Inc. Blood pump system. 4,363,609, Cl. 417-477.000.

Cottrell, Ian W.; Sandford, Paul A.; and Baird, John K., to Merck & Co., Inc. Dispersible xanthan gum blends. 4,363,669, Cl. 106-205.000.

Cottrell, Merlyn F.; Tegelman, Harold, Jr.; Holmes, Ronald E.; and Hofferber, John R., to E. R. Wagner Manufacturing Company. Stand-off for resistance wires. 4,363,959, Cl. 219-532.000.

Coulter Systems Corporation: *See—*
Kuehnle, Manfred R., 4,363,711, Cl. 204-192.00P.

Cousens, Alan K.: *See—*
Hargreaves, Brian; and Cousens, Alan K., 4,363,847, Cl. 428-283.000.

Covert, Stanley R. Retractable mirror and lock therefor. 4,363,534, Cl. 350-289.000.

Crafco, Inc.: *See—*
Crosby, Gaius P., 4,363,427, Cl. 222-146.00H.

Cragar Industries Inc.: *See—*
Bonniwell, Joel C.; and Ocheltree, William A., 4,363,521, Cl. 301-63.00R.

Crate, Barry T. Power operated boat loading/unloading marine trailer. 4,363,590, Cl. 414-518.000.

Crates, Fred J.; Fouss, James L.; and Parker, John J., to Hancor, Inc. Inlet and outlet baffle structure for sewage treatment tanks. 4,363,732, Cl. 210-532.200.

Creel, Theodore R., Jr.; and Beckwith, Ivan E., to United States of America, National Aeronautics and Space Administration. Sound shield. 4,363,237, Cl. 73-147.000.

Crockett, Dennis D.; and Weaver, Robert J., to Lincoln Electric Company, The. Granular flux for pipe welding. 4,363,676, Cl. 148-24.000.

Crofts, David, to Raychem Limited. Seals. 4,363,843, Cl. 428-43.000.

Cromemco Inc.: *See—*
Walker, James T., 4,364,037, Cl. 340-744.000.

Crosby, Gaius P., to Crafco, Inc. Asphalt dispenser vehicle. 4,363,427, Cl. 222-146.00H.

Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. Indole thromboxane synthetase inhibitors. 4,363,912, Cl. 546-273.000.

Crow, John H.: *See—*
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,363,791, Cl. 423-243.000.

Crown Cork & Seal Company, Inc.: *See—*
Ruemer, John, Jr.; and Potts, Vinson S., 4,363,179, Cl. 40-307.000.

Crum, Glen F.; and Paton, Samuel J., to El Paso Products Company. Catalyst composition for producing tertiary-butylstyrene. 4,363,748, Cl. 252-437.000.

Cruzan, Robert E., II. Cutting torch guide. 4,363,469, Cl. 266-77.000.

Cuer, Jean-Pierre: *See—*
Floreancig, Antoine; and Cuer, Jean-Pierre, 4,363,788, Cl. 423-9.000.

Cummins, William T.: *See—*
Leblanc, Raymond F.; and Cummins, William T., 4,363,474, Cl. 267-140.000.

Cuneo, Giuseppe, to Black & Decker Inc. Combination guard and rabbeting depth gauge associated with power planer. 4,363,343, Cl. 145-4.000.

Curtis, Michael; Garrett, Peter R.; and Mead, John, to Lever Brothers Company. Process for making controlled sudsing detergent powder. 4,363,740, Cl. 252-91.000.

Curtis, Ralph H. Gravity actuated guiding device for farm machines. 4,363,174, Cl. 33-264.000.

Curtiss-Wright Corporation: *See—*
De Feo, Angelo; and Drewniany, Edward, 4,363,504, Cl. 285-47.000.

Custard, Elizabeth; Liao, John C.; and Ponzo, John L., to Miles Laboratories, Inc. Stabilized solution producing a Romanowsky effect. 4,363,632, Cl. 8-506.000.

Cutler, John H.; Jarvinen, Willard B.; and Walker, Loren H., to General Electric Company. Unintentional impedance detection system. 4,364,007, Cl. 324-51.000.

D.C.M.: *See—*
Fara, Jacques P., 4,363,288, Cl. 118-210.000.

D. Gottlieb & Co.: *See—*
Edwall, Allen G., 4,363,485, Cl. 273-121.00A.

D.O.V.E. Equipment Corporation: *See—*
Boettcher, William C., 4,363,422, Cl. 221-75.000.

Daaboul, Fouad; Le Van, Tiu; and Fung, Kit-Chung, to Northern Telecom Limited. Method of and apparatus for echo detection in voice channel signals. 4,363,938, Cl. 179-170.200.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kaneki, Satoru, 4,363,846, Cl. 428-203.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,363,889, Cl. 523-513.000.

Daidotokushuko Kabushiki Kaisha: *See—*
Yano, Junichi, 4,363,729, Cl. 210-223.000.

Daiichi Seiyaku Company, Limited: *See—*
Yoshida, Kazuyuki; Kaneko, Shizuo; Okawara, Mikio; and Hiroki, Terushige, 4,363,285, Cl. 118-19.000.

Daikin Kogyo Co., Ltd.: *See—*
Shimizu, Tetsuo; and Koizumi, Shun, 4,363,900, Cl. 526-83.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bertelsbeck, Helmu, 4,363,940, Cl. 191-59.100.
Rauchle, Wilfried; Preisendanz, Walter; and Scholtissek, Leonhard, 4,363,708, Cl. 204-129.750.
Schmidt, Adolf; Jambor, Arno; and Huber, Guntram, 4,363,838, Cl. 428-31.000.

Dalke, James, to Arvin Industries, Inc. Colorized weather satellite converter. 4,364,085, Cl. 358-81.000.

Dalton, Christopher J., to Honeywell Information Systems Inc. Format switch. 4,364,025, Cl. 340-347.0DD.

Dammert, Wolfgang; and Enge, Horst. Compact minirelay. 4,364,018, Cl. 335-202.000.

Darling, Thomas R.: *See—*
Krespan, Carl G.; and Darling, Thomas R., 4,363,898, Cl. 525-404.000.

Dastoor, Minoo N.: *See—*
United States of America, National Aeronautics and Space Administration; Dastoor, Minoo N.; Schubert, Wayne W.; and Petersen, Gene R., 4,363,188, Cl. 47-58.000.

Davies Hamakua Sugar Company, a division of Theo. H. Davies & Co., Ltd.: *See—*
Bouvet, Pierre E.; and Suzor, Norland L. C., 4,363,636, Cl. 44-10.00A.

De Boer, Jacob; Sanderson, Hendrik J.; and Sommer, Friedrich, to U.S. Philips Corporation. Tape speed control device. 4,364,097, Cl. 360-70.000.

Decamps, Alain: *See—*
DeCeuster, Jean; Essemaeker, Paul; Bouillet, Edmond; Decamps, Alain; and Ledoux, Pierre, 4,363,699, Cl. 162-71.000.
DeCeuster, Jean; Essemaeker, Paul; Bouillet, Edmond; Decamps, Alain; and Ledoux, Pierre, to Solvay & Cie. Process for stabilizing solutions of peroxidic compounds used for bleaching. 4,363,699, Cl. 162-71.000.
Deeg, Reinhard; and Hack, Oswald, to International Standard Electric Corporation. Assembly for the keyboards of electric typewriters or similar machines. 4,363,942, Cl. 200-5.00A.
Deere & Company: *See—*
Van Gerpen, Harlan W., 4,363,377, Cl. 180-282.000.
De Feo, Angelo; and Drewniany, Edward, to Curtiss-Wright Corporation. High temperature lined conduits, elbows and tees. 4,363,504, Cl. 285-47.000.
Degussa Aktiengesellschaft: *See—*
Bozon, Alfred; Koberstein, Edgar; Pietka, Hans-Dieter; and Voelker, Herbert, 4,363,753, Cl. 252-477.00R.
Dejoie, Paul; and Lamarque, Bernard, to Perrot-France. Mobile irrigation bar. 4,363,444, Cl. 239-177.000.
Delaney, John W., to Sterling Drug Inc. Novel compositions and processes. 4,363,664, Cl. 106-21.000.
Delaney, Mark S.: *See—*
Hawthorne, M. Frederick; and Delaney, Mark S., 4,363,747, Cl. 252-431.00P.
Del Bianco, Matthew A.; and Tancredi, Henry J., to Du Pont de Nemours, E. I., and Company. Take-up roll mandrel slip clutch tensioning device. 4,363,455, Cl. 242-75.500.
de Maight, Winfried: *See—*
Eichele, Erich; and de Maight, Winfried, 4,363,607, Cl. 417-273.000.
Demange, Michel: *See—*
Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, 4,363,657, Cl. 75-80.000.
Demas, Nickolas P.: *See—*
Cortorillo, Salvatore F.; Demas, Nickolas P.; and Schwickert, Russell C., 4,363,994, Cl. 313-113.000.
Demus, Dietrich; Weissflog, Wolfgang; Zaschke, Horst; Wolff, Rudolf; and Kresse, Horst, to VEB Werk fur Fernsehelektronik Berlin im VEB Kombinat Mikroelektronik. Esters of 4-[2,2-dicyano-ethenyl]-phenols. 4,363,767, Cl. 260-463.000.
Dental Therapeutics AB: *See—*
Wahlstam, Hans, 4,363,795, Cl. 424-54.000.
der Avanessian, Mesrop. Dental technicians tool and tool retainer. 4,363,625, Cl. 433-74.000.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Sengebusch, Peter; and Nowack, Horst, 4,364,113, Cl. 364-507.000.
Deweese, Melvin T. Survival tool. 4,363,147, Cl. 7-158.000.
Diamond, Julius; and Wohl, Ronald A., to Berlex Laboratories, Inc. N-(3-Phenoxy-2-hydroxypropyl)benzimidazole-1-alkanamines. 4,363,808, Cl. 424-248.510.
Diamond Shamrock Corporation: *See—*
Knitter, Kathy A.; and Villa, Jose L., 4,363,637, Cl. 44-51.000.
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,363,886, Cl. 523-336.000.
Dickakian, Ghazi, to Exxon Research and Engineering Co. Production of carbon artifact precursors. 4,363,715, Cl. 208-40.000.
Dickinson, Roger P.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,363,912, Cl. 546-273.000.
Dickson, Howard K.: *See—*
Efkeman, Edward J.; Lloyd, Elliott; Dickson, Howard K.; and Adamson, James R., Jr., 4,363,967, Cl. 250-339.000.
Didde Graphic Systems Corporation: *See—*
Ury, Frank; Propheter, Howard L.; and Bird, Carlton A., 4,363,270, Cl. 101-180.000.
Diercks, Hans-Georg: *See—*
Wolfel, Erich R.; and Diercks, Hans-Georg, 4,364,122, Cl. 378-73.000.
Diesel, Nelson P. Process for affixing marker to fabric. 4,363,683, Cl. 156-184.000.
DiLuigi, Michael: *See—*
Hesch, Harold; DiLuigi, Michael; and Lindauer, Thomas, 4,363,578, Cl. 410-56.000.
Dingwall, John G.; and Tuck, Brian, to Ciba-Geigy Corporation. 4-Halgeno-oxetan-2-ones and process for their production. 4,363,923, Cl. 549-329.000.
Director-General of the Agency of Industrial Science & Technology: *See—*
Odawara, Osamu, 4,363,832, Cl. 427-183.000.
Di Vigano, Giovanni B. T. Ship's hull with a helical channel ahead of each propeller and method of establishing the shape of the same. 4,363,630, Cl. 440-69.000.
Dixon, Robert L.; and Maxsted, Malcolm D., to Smith International, Inc. Large diameter drill bit. 4,363,367, Cl. 175-340.000.
Dobson, Franklin A.: *See—*
Richey, Earl D.; and Dobson, Franklin A., 4,363,397, Cl. 198-655.000.
Dr. Ing. h.c.F. Porsche A.G.: *See—*
Burst, Hermann; and Macho, Leo, 4,363,510, Cl. 296-37.160.
Dr. Johannes Heidenhain GmbH: *See—*
Schmitt, Walter, 4,363,964, Cl. 250-237.00G.
Dofasco Inc.: *See—*
Martin, Henry; and Thompson, Charles R., 4,363,277, Cl. 105-201.000.
Donnelly Mirrors, Inc.: *See—*
Morgan, Cleon C., 4,363,191, Cl. 49-381.000.
D'Orazio, Vincent T., to S. C. Johnson & Son, Inc. Termite bait composition. 4,363,798, Cl. 424-84.000.
Dorfman, Gersh A.: *See—*
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.
Doster, Elizabeth. Quilt for use in wheelchairs. 4,363,141, Cl. 2-69.500.
Dow Chemical Company, The: *See—*
Gibbs, Marylu B.; Biggs, Robert D.; and Alsgaard, David W., 4,363,792, Cl. 423-335.000.
Hay, Robert A., II, 4,363,684, Cl. 156-201.000.
Hefner, Robert E., Jr.; Friedli, Hans R.; and Hazelrigg, Mark J., Jr., 4,363,907, Cl. 528-287.000.
Hinze, Kenneth J., 4,363,745, Cl. 252-402.000.
Settineri, William J.; Klassen, Harold E.; and Tolly, Milton C., 4,363,673, Cl. 134-2.000.
Drake, J. Michael; and Furumoto, Horace W., to Jersey Nuclear-Avco Isotopes, Inc. Compact reservoir system for dye lasers. 4,364,015, Cl. 372-53.000.
Dravo Corporation: *See—*
Blair, Gilbert; Behling, Roy A.; and Collins, Richard, 4,363,411, Cl. 212-191.000.
Drdlik, Frank J. Animal trap. 4,363,183, Cl. 43-81.500.
Dresser Industries, Inc.: *See—*
Ellis, Gary D., 4,363,358, Cl. 166-212.000.
Dresty, John E., Jr.; and Klein, Eugene M., to Suisman & Blumenthal, Incorporated. Process and apparatus for treating titanium machining scrap. 4,363,722, Cl. 209-3.000.
Drewniany, Edward: *See—*
De Feo, Angelo; and Drewniany, Edward, 4,363,504, Cl. 285-47.000.
Drexler Technology Corporation: *See—*
Bouldin, Eric W., 4,363,870, Cl. 430-510.000.
Dronova, Lidia M.: *See—*
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.
Du-Bro Products: *See—*
Broberg, Dewey O., Jr., 4,363,604, Cl. 416-245.00R.
Dubrous, Francis: *See—*
Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, 4,363,657, Cl. 75-80.000.
Duff, John, to Joy Manufacturing Company. Hydraulic impactor. 4,363,258, Cl. 91-165.000.
Duke, Jesse C. Animal waste collection apparatus. 4,363,508, Cl. 294-1.0BB.
Dunn, Wendell E., Jr. Alumina production via aluminum chloride oxidation. 4,363,789, Cl. 423-79.000.
Du Pont de Nemours, E. I., and Company: *See—*
Considine, Robert J., 4,363,552, Cl. 366-340.000.
Del Bianco, Matthew A.; and Tancredi, Henry J., 4,363,455, Cl. 242-75.500.
Krespan, Carl G.; and Darling, Thomas R., 4,363,898, Cl. 525-404.000.
Shain, Albert L., 4,363,892, Cl. 524-327.000.
Verhoeven, Laurentius M., 4,363,530, Cl. 339-17.00C.
Dupont, Jean M.: *See—*
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Durachenko, Mikhail I.: *See—*
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.
Durkoppwerke GmbH: *See—*
Reinke, Kurt, 4,363,281, Cl. 112-121.110.
Dwight, Anthony: *See—*
Frederick, Geoffrey; and Dwight, Anthony, 4,363,654, Cl. 75-34.000.
Dyakonov, Alexandr J.: *See—*
Rozovsky, Alexandr Y.; Stytsenko, Valentin D.; Nizova, Svetlana A.; Belov, Petr S.; and Dyakonov, Alexandr J., 4,363,750, Cl. 252-459.000.
Dyck, John D. Trip mechanism. 4,363,363, Cl. 172-264.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,363,462, Cl. 249-190.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Hagel, Rainer; and Redecker, Klaus, 4,363,679, Cl. 149-37.000.
Dynatech Laboratories, Incorporated: *See—*
Lancaster, Jesse F., 4,363,531, Cl. 339-107.000.
Dynatrans AB: *See—*
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E. R. Wagner Manufacturing Company: *See—*
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Ealding, Cyril J., to Imperial Chemical Industries Limited. Coated film bases, photographic films derived from the bases and processes for their production. 4,363,872, Cl. 430-532.000.
Eastman Kodak Company: *See—*
Clark, R. Donald; and Pridgen, Herman S., 4,363,913, Cl. 548-164.000.

Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,363,908, Cl. 528-302.000.
Reczek, James A.; and Welter, Thomas R., 4,363,865, Cl. 430-223.000.

Eaton Corporation: *See*—
Poff, Ronald I., 4,363,243, Cl. 73-766.000.

Eberle, William J., to General Battery Corporation. Apparatus for positioning batteries and hoisting batteries into a battery formation tub. 4,363,393, Cl. 414-592.000.

Ebi, Yutaka; and Kubo, Kikuo, to Ricoh Co., Ltd. Electrostatic ink-jet printer. 4,364,057, Cl. 346-75.000.

Ebi, Yutaka: *See*—
Horike, Masanori; and Ebi, Yutaka, 4,364,061, Cl. 346-75.000.

Edelman, Seymour. Drag modification piezoelectric panels. 4,363,991, Cl. 310-316.000.

Edmonds, Harold D.; and Markovits, Gary, to International Business Machines Corporation. Multi-layered metallized silicon matrix substrate. 4,364,100, Cl. 361-395.000.

Edney, Barry E.; and Zurcher, Alain. Device for breaking a hard material. 4,363,451, Cl. 241-39.000.

Edo Western Corporation: *See*—
Snow, Gordon L., 4,364,117, Cl. 367-152.000.

Edwall, Allen G., to D. Gottlieb & Co. Time based pinball game machine. 4,363,485, Cl. 273-121.00A.

Efkeman, Edward J.; Lloyd. Elliott; Dickson, Howard K.; and Adamson, James R., Jr., to United States of America, Army. Method and apparatus for far infrared detection. 4,363,967, Cl. 250-339.000.

Egolf, Thomas A., to United Technologies Corporation. Rotational speed governor. 4,363,241, Cl. 73-536.000.

Ehata, Shigeru: *See*—
Mizushima, Masashi; Maruyama, Masanori; Ehata, Shigeru; and Fukushima, Masakazu, 4,363,996, Cl. 313-449.000.

Ehrenrich, Burt J. Funnel for diesel oil cans. 4,363,425, Cl. 222-85.000.

Eichele, Erich; and de Maight, Winfried, to Zahnradfabrik Friedrichshafen, AG. Radial piston pump. 4,363,607, Cl. 417-273.000.

Eichenbaum, Bernard R., to Bell Telephone Laboratories, Incorporated. Manufacture of concentric coatings for fiber waveguides. 4,363,827, Cl. 427-8.000.

Eisai Co., Ltd.: *See*—
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,363,921, Cl. 549-74.000.

Eisenberg, Arnold J., to Owens-Corning Fiberglas Corporation. Annular bushing for forming glass fibers. 4,363,645, Cl. 65-2.000.

Eisend, Ewald; and Keller, Josef, to Fichtel & Sachs AG. Ratchet gear for the driving hub of a bicycle. 4,363,390, Cl. 192-46.000.

Eklund, Henrik J.: *See*—
Markham, Larry D.; and Eklund, Henrik J., 4,363,697, Cl. 162-19.000.

El Paso Products Company: *See*—
Crum, Glen F.; and Paton, Samuel J., 4,363,748, Cl. 252-437.000.

Elbrader, Clifford B.; and Milum, Jimmy L., to Emerson Electric Co. Support means for filter material in a non-electric air cleaner. 4,363,643, Cl. 55-499.000.

ElDifrawi, Ahmed A.; Blazek, Christopher F.; and Yudow, Bernard D., to Institute of Gas Technology. Thermal gradient humidification-dehumidification desalination system. 4,363,703, Cl. 203-10.000.

Electric Power Research Institute, Inc.: *See*—
Cheo, Peter K., 4,363,966, Cl. 250-339.000.

Electro-Nite Co.: *See*—
Bollen, Theo P. C., 4,363,929, Cl. 136-234.000.

Elf France: *See*—
Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel, 4,363,719, Cl. 208-111.000.

Elfes, Lee E.: *See*—
Richardson, Leonard H.; Mueller, Otto, Jr.; and Elfes, Lee E., 4,363,384, Cl. 188-72.700.

Ellis, Belvin B.: *See*—
Lin, Kou C.; and Ellis, Belvin B., 4,364,020, Cl. 336-212.000.

Ellis, Gary D., to Dresser Industries, Inc. Subsurface tubing hanger and stinger assembly. 4,363,358, Cl. 166-212.000.

Ema, Kiichi: *See*—
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,363,921, Cl. 549-74.000.

Emerson Electric Co.: *See*—
Elbrader, Clifford B.; and Milum, Jimmy L., 4,363,643, Cl. 55-499.000.

Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, to Volkswagenwerk Aktiengesellschaft. Fuel injection apparatus. 4,363,308, Cl. 123-533.000.

Energy Conversion Devices, Inc.: *See*—
Cannella, Vincent D.; and McCormick-Goodhart, Mark H., 4,363,691, Cl. 156-350.000.

Enge, Horst: *See*—
Dammert, Wolfgang; and Enge, Horst, 4,364,018, Cl. 335-202.000.

Engelhard, Philippe; and Szabo, Georges, to Compagnie Francaise de Raffinage. Method of using catalysts for reforming or isomerizing hydrocarbons in the presence of hydrogen. 4,363,721, Cl. 208-139.000.

Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., to International Business Machines Corporation. Heterofulvalene geminal dithiolate compounds and their selenium and tellurium analogs and a method of fabricating the same. 4,363,919, Cl. 549-32.000.

Engstrom, Folke, to A. Ahlstrom Osakeyhtio. Fluidized bed reactor. 4,363,292, Cl. 122-4.00D.

Enomoto, Fujio; and Morimoto, Ichiro, to Olympus Optical Company Ltd. Apparatus for establishing routine shot distance of taking lens in cameras. 4,363,546, Cl. 354-195.000.

Enomoto, Fujio: *See*—
Yamada, Toyotaka; and Enomoto, Fujio, 4,363,543, Cl. 354-58.000.

Enomoto, Hiroshi: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Equipment Company of America: *See*—
Mehta, Mehar K., 4,363,261, Cl. 92-128.000.

ER-WE-PA Maschinenfabrik u. Eisengiesserei GmbH: *See*—
Bolender, Walter, 4,363,615, Cl. 425-363.000.

Erckel, Rudiger: *See*—
Gunther, Dieter; Erckel, Rudiger; Rosch, Gunter; and Probst, Heinz, 4,363,744, Cl. 252-301.220.

Erickson, David T. Exercise device. 4,363,481, Cl. 272-125.000.

Erickson, Terry D., to J. I. Case Company. Trencher tooth quick attachment. 4,363,178, Cl. 37-191.00A.

Erickson, William R.: *See*—
Whitney, Solon G.; and Erickson, William R., 4,363,880, Cl. 521-26.000.

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Fischer, Walter; Kvita, Vratislav; and Zweifel, Hans, to Ciba-Geigy Corporation. 3,5-Disubstituted phthalic acid imides, phthalic acids and phthalic acid anhydrides. 4,363,917, Cl. 548-480.000.
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Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Christ, Klaus H., to Robert Bosch GmbH. Automotive-type voltage regulator and support assembly structure. 4,363,983, Cl. 310-68.00R.
Frito-Lay, Inc.: *See*—
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von Blanquet, Georg, 4,363,315, Cl. 126-273.00R.
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Garnache, Richard R.; Kenney, Donald M.; and Thoma, Nandor G., to International Business Machines Corporation. V-MOS Device with self-aligned multiple electrodes. 4,364,074, Cl. 357-23.000.
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Gasser, Rudolf, to Ernst Harlacher, Firma. Printing screen coating method and apparatus. 4,363,289, Cl. 118-696.000.
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Laskaris, Evangelos T., 4,363,981, Cl. 310-52.000.
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Mix, Renard E., 4,363,857, Cl. 429-234.000.
Thebert, Glenn W., 4,363,600, Cl. 415-156.000.
Thurston, Kelly W., 4,363,310, Cl. 123-572.000.
Gentile, Charles J. Propel-repel solid stick dispenser. 4,363,560, Cl. 401-68.000.
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Gerdlund, Carl P. Device for installing handle sticks in the ends of wieners. 4,363,158, Cl. 17-1.00S.
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, to Hoffmann-La Roche Inc. Process for preparing imidazodiazepines. 4,363,762, Cl. 260-239.30T.
Gessler, Hans; and Marienfeld, Gottfried, to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung. Bunker-discharge apparatus, especially for bulk material. 4,363,586, Cl. 414-311.000.
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Gibbs, Marylu B.; Biggs, Robert D.; and Alsgaard, David W., to Dow Chemical Company, The. Defluorination of fumed silica. 4,363,792, Cl. 423-335.000.
Gibson, John J., to RCA Corporation. Video disc player with RFI reduction circuit including a signal product generator. 4,364,119, Cl. 369-126.000.
Ginther, Gary D.; and MacDonald, Murdo A., to Clyde Corporation. Article feeding apparatus. 4,363,573, Cl. 406-76.000.
Giorgini, Norman L., to Minnesota Mining & Manufacturing Co. Pressure-fixing apparatus and method. 4,363,862, Cl. 430-98.000.
Giovanni Marchisio & C. S.r.l.: *See*—
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Gladon, Richard J., to Iowa State University Research Foundation, Inc. Gas trap for removing atmospheric pollutants and method of operation. 4,363,639, Cl. 55-95.000.
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Glasser, Fredrik P.; and Gunawardane, Richard P., to National Research Development Corporation. Fertilizer material from apatite. 4,363,650, Cl. 71-36.000.
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Glyco Inc.: *See*—
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Goad, Helen G. Prosthetic device for mastectomy patients. 4,363,144, Cl. 3-36.000.
Goepp, Robert A.; and Freese, Uwe E., to University Patents, Inc. Custom valved cervical cap. 4,363,318, Cl. 128-130.000.
Goldenberg, Joseph, to Construction Products Research and Development Corporation. Pre-cast building element and method. 4,363,200, Cl. 52-251.000.
Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Toy motorcycle and launcher. 4,363,186, Cl. 46-209.000.
Goldfarb, Adolph E. Sound-responsive electronic game. 4,363,482, Cl. 273-1.0GC.
Goldstein, Gideon: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,363,799, Cl. 424-85.000.
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Goodyear Tire & Rubber Company, The: *See*—
Pepe, Richard J., 4,363,346, Cl. 152-356.00R.
Gorbaty, Martin L.: *See*—
Liotta, Ronald; and Gorbaty, Martin L., 4,363,714, Cl. 208-14.000.
Goretta, Louis A.; and Sibert, Frederick J., to Nalco Chemical Company. Catalyst of activated copper-zinc alloy and its use in hydrating acrylonitrile. 4,363,752, Cl. 252-475.000.
Goto, Shinichi, to Hitachi Maxell, Ltd. Magnetic recording tape cassette. 4,363,456, Cl. 242-197.000.

Gottlieb, Sheldon K. Method for relief of burning, itching, and pain of cutaneous and mucosal surfaces. 4,363,818, Cl. 424-319.000.

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Gould Inc.: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.

Gould, Joseph C., to Borden, Inc. Automotive cooling system cleaner. 4,363,741, Cl. 252-142.000.

Graff, Eugene A.; and Rusch, Larry P., to Westinghouse Electric Corp. Fluorescent lamp processing which improves performance of zinc silicate phosphor used therein. 4,363,998, Cl. 313-487.000.

Granstrom, Staffan, to ASEA Aktiebolag. Method and apparatus for melting solid pieces of metal. 4,363,653, Cl. 75-10.00R.

Gray, Richard W. Optical modulator. 4,364,014, Cl. 330-4.300.

Greenberg, Lawrence J.: *See*—
Hyman, Gregory E.; and Greenberg, Lawrence J., 4,363,181, Cl. 40-466.000.

Greene, Marvin I.; and Gelbein, Abraham P. Cracking of heavy carbonaceous liquid feedstocks utilizing hydrogen donor solvent. 4,363,716, Cl. 208-80.000.

Greenquist, Alfred C., to Miles Laboratories, Inc. Multilayer analytical element having an impermeable radiation nondiffusing reflecting layer. 4,363,874, Cl. 435-7.000.

Greer, Charles H., to Piqua Engineering, Inc. Vertical baler with improved safety gate and door latch system. 4,363,267, Cl. 100-255.000.

Grunberg, Pierre, to Valeo. Braking system with anti-lock circuit. 4,363,524, Cl. 303-92.000.

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Kummermehr, Hans, 4,363,738, Cl. 252-62.000.

Grzyll, John V. Open-faced welding rod/stub receptacle. 4,363,402, Cl. 206-380.000.

Gudgel, Willard L.: *See*—
Brown, Leon C.; Campbell, Jesse L.; Fitts, Uscoe J.; and Gudgel, Willard L., 4,363,549, Cl. 355-3.0FU.

Gueguen, Claude: *See*—
Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel, 4,363,719, Cl. 208-111.000.

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Fritz, Adolf R.; Gottschick, Michael; Krappel, Alfred; and Guggenmos, Johannes, 4,363,304, Cl. 123-418.000.

Guglielmi, William P.; and Caserta, Richard E. Automatic chlorinator for swimming pools. 4,363,728, Cl. 210-205.000.

Guillon, Michel: *See*—
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, 4,363,796, Cl. 424-61.000.

Gulbins, Erich: *See*—
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,363,710, Cl. 204-181.00C.

Gulf Oil Corporation: *See*—
Patel, Natu R., 4,363,915, Cl. 548-265.000.

Gulf Research & Development Company: *See*—
Madgavkar, Ajay M.; and Vogel, Roger F., 4,363,361, Cl. 166-256.000.

Gulf & Western Corporation: *See*—
Sinclair, Robert I.; Anderson, Verner; Logan, David J.; and Rich, Leonard G., 4,363,330, Cl. 131-105.000.

Gunawardane, Richard P.: *See*—
Glasser, Fredrik P.; and Gunawardane, Richard P., 4,363,650, Cl. 71-36.000.

Gunesin, Binnur; Hamed, Gary R.; Kang, Jung W.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Thermally reversible copolymers and process for the preparation thereof. 4,363,897, Cl. 525-195.000.

Gunther, Dieter; Erckel, Rudiger; Rosch, Gunter; and Probst, Heinz, to Hoechst Aktiengesellschaft. Mixtures of optical brighteners and their use for the optical brightening. 4,363,744, Cl. 252-301.220.

Gustafsson, Berth U., to Projectus Industriprodukter AB. Lamellar separator. 4,363,730, Cl. 210-521.000.

Guth, Friedrich, to Texas Instruments Deutschland GmbH. Alignment and recognition apparatus. 4,364,086, Cl. 358-101.000.

Gyomrey, Karl M., to Coles Cranes Limited. Endless chain drive for telescopic jib sections. 4,363,413, Cl. 212-262.000.

Hack, Oswald: *See*—
Deeg, Reinhard; and Hack, Oswald, 4,363,942, Cl. 200-5.00A.

Hackett, Walter J.; and Galena, Peter E., to Purex Corporation. Spray buff reactant and application thereof. 4,363,835, Cl. 427-355.000.

Haefely, Willy: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.

Hagel, Rainer; and Redecker, Klaus, to Dynamit Nobel Aktiengesellschaft. Use of zinc peroxide as oxidant for explosives and pyrotechnical mixtures. 4,363,679, Cl. 149-37.000.

Hagner, Willi: *See*—
Thaer, Andreas; Hagner, Willi; Frimmel, Horst; and Riegel, Horst, 4,363,536, Cl. 351-245.000.

Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Hydraulic system for outboard motor with sequentially operating tilt and trim means. 4,363,629, Cl. 440-61.000.

Hall, Henry H., to Mattel, Inc. Game top. 4,363,487, Cl. 273-147.000.

Hall, Larry K.: *See*—
Rosen, Marvin; and Hall, Larry K., 4,363,891, Cl. 524-317.000.

Hallenius, Tore J.; and Sagefors, Karl I., to WP-System Aktiebolag. System for the storage of petroleum products and other fluids in a rock. 4,363,563, Cl. 405-55.000.

Halstead Industries, Inc.: *See*—
Nussbaum, Otto J., 4,363,218, Cl. 62-79.000.

Halstead, Kenneth G.; and Benbow, Eugene C., to Westinghouse Electric Corp. Clutch mechanism for time of day watthour meter registers. 4,364,009, Cl. 324-116.000.

Hamajima, Shigemitsu: *See*—
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.

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Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 4H-3,1-Benzoxazine derivatives and their use for controlling undesired plant growth. 4,363,651, Cl. 71-88.000.

Hamprecht, Gerhard: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; and Mueller, Franz-Josef, 4,363,925, Cl. 556-415.000.

Hancor, Inc.: *See*—
Crates, Fred J.; Fouss, James L.; and Parker, John J., 4,363,732, Cl. 210-532.200.

Hand, Gary A.: *See*—
Hunyar, Csaba K.; and Hand, Gary A., 4,363,705, Cl. 204-5.000.

Hannerz, Kare, to AB Asea-Atom. Boiling reactor. 4,363,780, Cl. 376-282.000.

Hara, Hikoyoshi: *See*—
Nasu, Sataro; Hara, Hikoyoshi; and Iwanaga, Kouichi, 4,363,169, Cl. 30-41.000.

Hara, Takeshi: *See*—
Masuho, Yasuhiko; Kishida, Kazuo; and Hara, Takeshi, 4,363,758, Cl. 260-112.00B.

Hardee's Food Systems, Inc.: *See*—
Stahl, Lawrence E., 4,363,642, Cl. 55-233.000.

Hardouin, Pierre: *See*—
Lucas, Gerard; and Hardouin, Pierre, 4,363,180, Cl. 40-316.000.

Hargreaves, Brian; and Cousens, Alan K., to AMFU Limited. Flexible sheet material. 4,363,847, Cl. 428-283.000.

Harmsen, Jan H., to Brinkmann & Niemeyer N.V. Automatic cattle feeding device. 4,363,291, Cl. 119-51.00R.

Harper, Rex M.: *See*—
Breslow, Jeffrey D.; Harper, Rex M.; and Glickson, David A., 4,363,484, Cl. 273-85.00G.

Harris, Robert M.; and Betzold, Edward R., to FMC Corporation. Strikedown service mechanism for a vertical launching system. 4,363,257, Cl. 89-1.802.

Harshbarger, Thad L. Battery case for an electrically operated device. 4,364,103, Cl. 362-200.000.

Hartless, Ray L.: *See*—
Chandross, Edwin A.; and Hartless, Ray L., 4,363,867, Cl. 430-302.000.

Hartman, Robert. Apparatus for converting power chain saw into a boring tool. 4,363,577, Cl. 408-20.000.

Hartmann, Ludwig, to Carl Freudenberg, Firma. Spun non-woven fabrics with high dimensional stability, and processes for their production. 4,363,845, Cl. 428-198.000.

Harvey, Andrew, to Foster-Miller Associates, Inc. Injector for a material transport system. 4,363,572, Cl. 406-58.000.

Hasegawa, Taiji: *See*—
Atago, Takeshi; and Hasegawa, Taiji, 4,363,209, Cl. 60-274.000.

Hasegawa, Takashi: *See*—
Suzuki, Takami; and Hasegawa, Takashi, 4,363,559, Cl. 400-175.000.

Hashimoto, Akira; and Shirai, Hitoshi, to Olympus Optical Co., Ltd. Apparatus for mounting a film magazine into camera. 4,363,547, Cl. 354-212.000.

Hashimoto, Kazunori: *See*—
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,363,921, Cl. 549-74.000.

Hashimoto, Yoshitaka; Shirota, Norihisa; and Yamamoto, Kaichi, to Sony Corporation. Method and apparatus for processing a digital color video signal. 4,364,081, Cl. 358-13.000.

Hasler, Peter H.: *See*—
Murray, Bruce A.; Hasler, Peter H.; and Roth, Augustin, 4,363,610, Cl. 425-89.000.

Haugeberg, Ronald H. Vacuum control apparatus. 4,363,373, Cl. 180-175.000.

Hauser, Ambrose A.: *See*—
Cline, Larry D.; Hauser, Ambrose A.; Sidenstick, James E.; and Zlatic, Mark S., 4,363,599, Cl. 415-136.000.

Hauske, James R., to Pfizer Inc. 3",4"-Oxyallylene erythromycin and oleandomycin, composition and method of use. 4,363,803, Cl. 424-180.000.

Hawthorne, M. Frederick; and Delaney, Mark S., to University of California, The Regents of the. Metallocarborane precursor and catalyst. 4,363,747, Cl. 252-431.00P.

Hay, Robert A., II, to Dow Chemical Company, The. Method for the lamination of foam including a reinforcing scrim. 4,363,684, Cl. 156-201.000.

Hayashi, Midori: *See*—
Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,363,794, Cl. 424-52.000.

Hazelrigg, Mark J., Jr.: *See*—
Hefner, Robert E., Jr.; Friedli, Hans R.; and Hazelrigg, Mark J., Jr., 4,363,907, Cl. 528-287.000.
Hazeltine Corporation: *See*—
Lopez, Alfred R., 4,364,050, Cl. 343-700.0MS.
Health Care Innovations, Inc.: *See*—
Paddon, Christopher M.; and Wetzel, Donald C., 4,363,368, Cl. 177-144.000.
Hecht, Gert: *See*—
Schonwald, Siegfried; and Hecht, Gert, 4,363,598, Cl. 415-53.00T.
Hedahl, Richard N., to FMC Corporation. Truck wheel clamp. 4,363,175, Cl. 33-288.000.
Hefner, Robert E., Jr.; Friedli, Hans R.; and Hazelrigg, Mark J., Jr., to Dow Chemical Company, The. Cohalogenation process for polyesters. 4,363,907, Cl. 528-287.000.
Heidt, Alfred; Link, Erich; and Ortlieb, Wolfgang, to Frankl & Kirchner GmbH & Co. KG Fabrik fur Elektromotoren u. elektrische Apparate. Circuit arrangement for energy economy. 4,364,001, Cl. 318-371.000.
Heikki, Hamalainen. Lift wall provided with lifting machinery. 4,363,348, Cl. 160-84.00R.
Heimbigner, Gary L., to Rockwell International Corporation. Reduced power tristate driver circuit. 4,363,978, Cl. 307-451.000.
Heine, Hans-Georg; Knops, Hans-Joachim; and Priesnitz, Uwe, to Bayer Aktiengesellschaft. Preparation of novel 1-hydroxycyclopropanecarboxylic acid intermediates. 4,363,926, Cl. 556-442.000.
Heinzl, Alfred; and Stadler, Heinz, to Siemens Aktiengesellschaft. Device for conveying and dispensing liquid media. 4,363,426, Cl. 222-134.000.
Hemp, John: *See*—
Rabeh, Riadh H. A.; and Hemp, John, 4,363,244, Cl. 73-861.080.
Hendrikson, Kenneth L.: *See*—
Flint, John R.; Hendrikson, Kenneth L.; and Rabindran, K. George, 4,363,457, Cl. 242-203.000.
Henkel Corporation: *See*—
Roesler, Richard R., 4,363,689, Cl. 156-307.300.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Conrad, Jens; Bruns, Klaus; and Upadek, Horst, 4,363,754, Cl. 252-522.00R.
Henson, Glen E.: *See*—
Fisher, Milton W.; and Henson, Glen E., 4,363,480, Cl. 272-69.000.
Henson, Kenneth A. Sloping-terrain vehicle. 4,363,495, Cl. 280-12.00H.
Herchenbach, Horst, to Klockner-Humboldt-Deutz AG. Method and apparatus for burning raw materials. 4,363,668, Cl. 106-100.000.
Hersh, David. Shoe polish. 4,363,893, Cl. 524-376.000.
Herzig, Peter, to Ewag A.G., Maschinen - und Werkzeugfabrik. Universal grinding machine. 4,363,193, Cl. 51-48.0HE.
Hesch, Harold; DiLuigi, Michael; and Lindauer, Thomas, to Pullman Incorporated. Cushioned low profile trailer. 4,363,578, Cl. 410-56.000.
Hester Industries, Inc.: *See*—
Williams, Charles E., 4,363,263, Cl. 99-352.000.
Heyman, Joseph S., to United States of America, National Aeronautics and Space Administration. Pulsed phase locked loop strain monitor. 4,363,242, Cl. 73-761.000.
Hickl, Anthony J., to Cabot Corporation. Nickel-base alloy resistant to wear. 4,363,659, Cl. 420-454.000.
Hidding, Daniel P. Method and apparatus for injection molding utilizing expandable cavity. 4,363,772, Cl. 264-328.700.
Hilbig, Josef; Holst, Arno; Kunkler, Hans; Stolting, Klaus; and Schminke, Wolfgang, to Hoechst Aktiengesellschaft. Apparatus for continuously producing water-soluble hydroxyalkyl cellulose and related ethers. 4,363,784, Cl. 422-134.000.
Hill, Herbert M.; and Shrader, Donald R. Apparatus for chopping scrap strip material into small pieces. 4,363,453, Cl. 241-222.000.
Hill, Nicholas J. Antimicrobial solution. 4,363,663, Cl. 106-18.310.
Hiller, Norbert, to Gebrueder Heller Maschinenfabrik GmbH. Automatic tool exchanger. 4,363,166, Cl. 29-568.000.
Hilty, Robert D., to Keck Consulting Services, Inc. Screened hollow stem auger for use in well drilling and testing process. 4,363,366, Cl. 175-314.000.
Hinze, Kenneth J., to Dow Chemical Company, The. Antioxidant compositions. 4,363,745, Cl. 252-402.000.
Hiraoka, Takeshi: *See*—
Takahashi, Kentaro; Hiraoka, Takeshi; and Urano, Shigeru, 4,363,662, Cl. 75-243.000.
Hiroki, Terushige: *See*—
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Hiromori, Yasutaka: *See*—
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Hirota, Akira; and Tsunekawa, Masaharu, to Victor Company of Japan, Ltd. Multiple-channel rotary transformer circuit in a magnetic recording and/or reproducing apparatus. 4,364,098, Cl. 360-108.000.
Hirota, Yutaka: *See*—
Mishina, Noritoshi; Hirota, Yutaka; and Nakamura, Satoshi, 4,363,851, Cl. 428-333.000.
Hirschberg, Eugene H.; Bertolacini, Ralph J.; and Modica, Frank S., to Standard Oil Company (Indiana). Passivating metals on cracking catalysts with zinc. 4,363,720, Cl. 208-120.000.
Hirsekorn, Franklin D. Vacuum mold for plastics. 4,363,617, Cl. 425-388.000.
Hitachi Heating Appliances Co., Ltd.: *See*—
Tachikawa, Hajime; Watanabe, Mitsuru; and Yokoyama, Kenjiro, 4,363,957, Cl. 219-497.000.
Hitachi Koki Co., Ltd.: *See*—
Matsuda, Yasumasa; Sagae, Syoji; Kasahara, Masatoshi; and Uchida, Hiroyasu, 4,364,070, Cl. 346-140.00R.
Hitachi, Ltd.: *See*—
Amano, Matsuo; Mouri, Yasunori; Abe, Osamu; Suda, Seiji; and Sasayama, Takao, 4,363,307, Cl. 123-492.000.
Atago, Takeshi; and Hasegawa, Taiji, 4,363,209, Cl. 60-274.000.
Katsuta, Teiji; Nishiwaki, Koji; and Katagiri, Shinjiro, 4,363,953, Cl. 219-121.0EK.
Kodama, Churyo, 4,363,997, Cl. 313-487.000.
Koseki, Yasuo; Yamada, Akira; Nishimura, Yuusaku; and Takahashi, Sankichi, 4,363,219, Cl. 62-101.000.
Kusano, Masaaki, 4,364,044, Cl. 340-825.850.
Maeda, Takeshi; Shigematsu, Kazuo; and Yonezawa, Seiji, 4,364,118, Cl. 369-44.000.
Matsuda, Yasumasa; Sagae, Syoji; Kasahara, Masatoshi; and Uchida, Hiroyasu, 4,364,070, Cl. 346-140.00R.
Mizushima, Masashi; Maruyama, Masanori; Ehata, Shigeru; and Fukushima, Masakazu, 4,363,996, Cl. 313-449.000.
Narato, Kiyoshi; Ohtsuka, Keizou; and Niwa, Sadahiko, 4,364,032, Cl. 340-679.000.
Onodera, Toru; Ohsawa, Akira; Nishino, Hideki; and Watari, Masao, 4,364,112, Cl. 364-200.000.
Takayama, Teruo, 4,363,303, Cl. 123-339.000.
Tonomura, Kenichi; and Takahashi, Kyoichi, 4,364,082, Cl. 358-28.000.
Toya, Mitsuo, 4,363,935, Cl. 179-2.0EA.
Hitachi Maxell, Ltd.: *See*—
Goto, Shinichi, 4,363,456, Cl. 242-197.000.
Yasui, Masaaki; Matsuura, Takeshi; and Watatani, Seiji, 4,363,850, Cl. 428-329.000.
Hitachi Microcomputer Engineering Ltd.: *See*—
Tonomura, Kenichi; and Takahashi, Kyoichi, 4,364,082, Cl. 358-28.000.
Hodes, Erich; Steeg, Michael; and Lippok, Peter, to Glyco-Metall-Werke Daelen & Loos GmbH. Method for manufacturing workpieces having adaptation faces capable of withstanding extremely high surface pressures and temperatures, and product produced thereby. 4,363,854, Cl. 428-632.000.
Hodge, John C. W.: *See*—
Willison, Geoffrey; and Hodge, John C. W., 4,363,888, Cl. 523-502.000.
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Gunther, Dieter; Erckel, Rudiger; Rosch, Gunter; and Probst, Heinz, 4,363,744, Cl. 252-301.220.
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Hoesch Werke Aktiengesellschaft: *See*—
Busemann, Eduard, 4,363,946, Cl. 219-10.590.
Hofferber, John R.: *See*—
Cottrell, Merlyn F.; Tegelman, Harold, Jr.; Holmes, Ronald E.; and Hofferber, John R., 4,363,959, Cl. 219-532.000.
Hoffman, Melvin G.; and Janneck, Frank W., to General Motors Corporation. Ceramic combustor mounting. 4,363,208, Cl. 60-39.320.
Hoffman, Norman E., to AMP Incorporated. Circuit path conductors in plural planes. 4,363,930, Cl. 174-68.500.
Hoffmann-La Roche Inc.: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Holahan, Edward T.; and Meyer, Burton C., to Marvin Glass & Associates. Novelty light. 4,364,104, Cl. 362-223.000.
Holben, Clair D.; and Jeans, Edward L., to Cadbury Schweppes PCL. Quick coupling device for a gas pressurization system. 4,363,424, Cl. 222-4.000.
Holl, Gordon D.: *See*—
Marcolina, Gene A., 4,363,184, Cl. 43-85.000.
Hollander, Edward F., Jr., to Glass, John P. Packaging method. 4,363,205, Cl. 53-434.000.
Hollandsche Beton Groep N.V.: *See*—
van der Pot, Barend J. G., 4,363,570, Cl. 405-303.000.
Holmes, David D., to RCA Corporation. Television signal ghost detector. 4,364,092, Cl. 358-167.000.
Holmes, David D., to RCA Corporation. Television ghost cancellation system with phase-controlled remodulation. 4,364,093, Cl. 358-167.000.
Holmes, Ronald E.: *See*—
Cottrell, Merlyn F.; Tegelman, Harold, Jr.; Holmes, Ronald E.; and Hofferber, John R., 4,363,959, Cl. 219-532.000.
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Hilbig, Josef; Holst, Arno; Kunkler, Hans; Stolting, Klaus; and Schminke, Wolfgang, 4,363,784, Cl. 422-134.000.
Holze, Ernest P., Jr., to Branson Ultrasonics Corporation. Resonator exhibiting uniform motional output. 4,363,992, Cl. 310-323.000.
Holzer, Joseph C., to Joanna Western Mills Company. Adjustable wall mounted bracket. 4,363,459, Cl. 248-265.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Honda, Shoichi, 4,363,300, Cl. 123-315.000.
Kamiya, Tadashi, 4,363,375, Cl. 180-227.000.
Naito, Hiroyasu, 4,363,297, Cl. 123-146.50A.
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Fahley, Jerome A., 4,363,239, Cl. 73-304.00C.
Shafer, Donald E., 4,364,071, Cl. 346-153.100.

Honeywell Information Systems Inc.: *See*—
Dalton, Christopher J., 4,364,025, Cl. 340-347.0DD.
Honig, Gunter; Braunger, Joachim; Krauter, Imanuel; and Bone, Rainer, to Robert Bosch GmbH. Evaluation circuit for electrical signals. 4,363,979, Cl. 307-519.000.
Honma, Kimiyasu, to Kabushiki Kaisha Audio-Technica. Pickup cartridge of moving coil type for phonograph. 4,364,120, Cl. 369-138.000.
Hook, Derek L. Removal of fly ash from the surface of liquids. 4,363,735, Cl. 210-776.000.
Hora, Richard E., to FMC Corporation. Blocking-type key. 4,363,562, Cl. 403-318.000.
Hori, Hisako: *See*—
Shirahata, Isao; Kitamura, Nobu; Nakamura, Nobuyuki; and Hori, Hisako, 4,363,899, Cl. 525-437.000.
Horie, Seiji: *See*—
Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, 4,363,829, Cl. 427-53.100.
Horike, Masanori; and Ebi, Yutaka, to Ricoh Company, Ltd. Ink jet printing apparatus comprising automatic ink jet deflection adjustment means. 4,364,061, Cl. 346-75.000.
Horike, Masanori: *See*—
Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,364,060, Cl. 346-75.000.
Horst, Robert L., to Armstrong World Industries, Inc. Pattern registration control bars. 4,363,271, Cl. 101-181.000.
Horstermann, Heinrich: *See*—
Ludwig, Peter; and Horstermann, Heinrich, 4,363,399, Cl. 198-833.000.
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, to Dai Nippon Toryo Co., Ltd. Anti-corrosive coating composition and process for formation of anti-corrosive coatings. 4,363,889, Cl. 523-513.000.
Hoshino, Shozi: *See*—
Tanioka, Susumu; Sasaki, Akiyoshi; and Hoshino, Shozi, 4,363,265, Cl. 99-510.000.
Hotine, William. Inflatable stressed skin microwave antenna. 4,364,053, Cl. 343-915.000.
Howard, Anthony J.: *See*—
Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,363,667, Cl. 106-90.000.
Howard, Thomas E., to Joy Manufacturing Company. Continuous mining machine. 4,363,519, Cl. 299-31.000.
Howden Equipment Services Pty. Ltd.: *See*—
Lang, Timothy R.; and Casimir, Donald J., 4,363,264, Cl. 99-510.000.
Hoya Corporation: *See*—
Nakajima, Yuji; and Izumitani, Tetsuro, 4,363,852, Cl. 428-432.000.
Hoyer, Gerd: *See*—
Schmidt, Manfred; Hoyer, Gerd; Leiberich, Hermann; and Pietschmann, Helmut, 4,363,626, Cl. 433-85.000.
Hoyles, Peter J.: *See*—
Knoll, Frank S.; Taylor, Joseph B.; and Hoyles, Peter J., 4,363,723, Cl. 209-128.000.
HPM Corporation: *See*—
Kruder, George A., 4,363,768, Cl. 264-68.000.
Hsieh, C. L., to Kung Hsue She Educational Supplies Co., Ltd. Locking device for percussion instruments' stand. 4,363,561, Cl. 403-92.000.
Hsu, Sheng T.; and Schnable, George L., to RCA Corporation. Method of forming tapered contact holes for integrated circuit devices. 4,363,830, Cl. 427-88.000.
Huber, Guntram: *See*—
Schmidt, Adolf; Jambor, Arno; and Huber, Guntram, 4,363,838, Cl. 428-31.000.
Huchler, Otto H.: *See*—
Mueller, Herbert; and Huchler, Otto H., 4,363,924, Cl. 549-509.000.
Huehne, Erwin D., to Eutectic Corporation. Gas-torch construction. 4,363,443, Cl. 239-79.000.
Hughes Aircraft Company: *See*—
Verzwyvelt, Scott A., 4,363,834, Cl. 427-296.000.
Humphries, Darral V.: *See*—
Austen, Alfred R.; and Humphries, Darral V., 4,363,611, Cl. 425-97.000.
Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,363,503, Cl. 282-27.500.
Hunkeler, Walter: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Hunter, Joseph M. Rotary drilling head. 4,363,357, Cl. 166-84.000.
Hunyar, Csaba K.; and Hand, Gary A., to Capitol Records, Inc. Passivating and silver removal method. 4,363,705, Cl. 204-5.000.
Huppert, Vaughn P.; and Castoro, Richard J. Internally lighted decorative display. 4,364,102, Cl. 362-123.000.
Hutas, Istvan: *See*—
Ambrus, Dezso; Szabolcsi, Tamas; and Hutas, Istvan, 4,363,910, Cl. 546-172.000.
Hutchinson, Robert E., Jr. Photographic developing process. 4,363,869, Cl. 430-427.000.
Hutchinson, William Y., to Continental Scale Corporation. Pediatric tray and weighing scale. 4,363,371, Cl. 177-262.000.
Hutson, Donald G., to Cal Detect, Inc. Method and apparatus for measuring breath alcohol. 4,363,635, Cl. 436-132.000.
Hutter, Hans-Georg. Multipart actuating mechanism. 4,364,019, Cl. 335-207.000.
Hyatt, Gilbert P. Computerized machine control system. 4,364,110, Cl. 364-107.000.
Hydrodynamic Energy Systems Corporation: *See*—
Borgren, Peter M., 4,363,564, Cl. 405-77.000.
Hyman, Gregory E.; and Greenberg, Lawrence J. Electronic musical mobile. 4,363,181, Cl. 40-466.000.
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, to Nippon Steel Corporation. Method for treating an electromagnetic steel sheet and an electromagnetic steel sheet having marks of laser-beam irradiation on its surface. 4,363,677, Cl. 148-111.000.
Ida, Yukio: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.
Iizuka, Hisakazu: *See*—
Nagakubo, Yoshihide; and Iizuka, Hisakazu, 4,363,696, Cl. 156-653.000.
Iizuka, Motohiko; Nakatani, Genji; and Kishimoto, Sumiyuki, to Nippon Kokan Kabushiki Kaisha. Method for operating blast furnace. 4,363,655, Cl. 75-41.000.
Iizuka, Syogo: *See*—
Suzuki, Yoshitsug.r; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,363,165, Cl. 29-564.800.
Imai, Nobuyuki: *See*—
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.
Imai, Shigeki: *See*—
Fukuda, Hiroaki; and Imai, Shigeki, 4,364,041, Cl. 340-785.000.
Imamura, Kazuyoshi; Akimoto, Norio; and Awaya, Shozo, to Asahi Kasei Kogyo Kabushiki Kaisha. Hot-melt polyester. 4,363,853, Cl. 428-480.000.
Imamura, Yoshiyuki; and Kawakami, Moriatsu, to Laurel Bank Machine Co., Ltd. Sheet binding apparatus. 4,363,692, Cl. 156-351.000.
IMI Kynoch Limited: *See*—
Williams, David E.; Verma, Kamal K.; and Fisher, John M., 4,363,706, Cl. 204-105.00R.
Imperial Chemical Industries Limited: *See*—
Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,363,667, Cl. 106-90.000.
Ealding, Cyril J., 4,363,872, Cl. 430-532.000.
Thomas, David H., 4,363,616, Cl. 425-339.000.
Innovationsteknik: *See*—
Johansson, Sven L., 4,363,279, Cl. 109-29.000.
Inohara, Junichi: *See*—
Yamazaki, Osamu; Inohara, Junichi; Tazuke, Kazuo; and Wasa, Kiyotaka, 4,363,990, Cl. 310-313.00C.
Institut Francais du Petrole: *See*—
Prigent, Michel; and Martin, Lucien, 4,363,707, Cl. 204-129.000.
Institute of Gas Technology: *See*—
Anderson, Gerald L.; Borders, Harley A.; and Berry, F. Otis, 4,363,790, Cl. 423-230.000.
ElDifrawi, Ahmed A.; Blazek, Christopher F.; and Yudow, Bernard D., 4,363,703, Cl. 203-10.000.
Intel Corporation: *See*—
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, Neil C., 4,364,075, Cl. 357-23.000.
Interholz Technik GmbH: *See*—
Volk, Karl, 4,363,252, Cl. 83-422.000.
Intermountain Health Care: *See*—
Clark, Justin S., 4,363,327, Cl. 128-719.000.
International Business Machines Corp.: *See*—
Brodsky, Marc H.; and Scott, Bruce A., 4,363,828, Cl. 427-39.000.
Brown, Leon C.; Campbell, Jesse L.; Fitts, Uscoe J.; and Gudgel, Willard L., 4,363,549, Cl. 355-3.0FU.
Edmonds, Harold D.; and Markovits, Gary, 4,364,100, Cl. 361-395.000.
Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., 4,363,919, Cl. 549-32.000.
Garnache, Richard R.; Kenney, Donald M.; and Thoma, Nandor G., 4,364,074, Cl. 357-23.000.
Paetsch, Karl, 4,364,024, Cl. 340-146.3SY.
International Harvester Company: *See*—
Gagliani, John; and Lee, Raymond, 4,363,690, Cl. 156-307.500.
Gagliani, John; and Lee, Raymond, 4,363,883, Cl. 521-122.000.
International Nuclear Energy Systems Co.: *See*—
Bussard, Robert W.; and Coppi, Bruno, 4,363,775, Cl. 376-133.000.
International Standard Electric Corporation: *See*—
Bergersen, Hans A., 4,363,947, Cl. 219-528.000.
Deeg, Reinhard; and Hack, Oswald, 4,363,942, Cl. 200-5.00A.
Inventco Sales Limited: *See*—
Abbott, Ronald L., 4,363,223, Cl. 62-303.000.
Iowa State University Research Foundation, Inc.: *See*—
Gladon, Richard J., 4,363,639, Cl. 55-95.000.
Irifune, Hideki: *See*—
Okamura, Tatsuro; and Irifune, Hideki, 4,363,739, Cl. 252-62.000.
Ishii, Yasuo: *See*—
Nishimura, Naozumi; Matsunaga, Akira; and Ishii, Yasuo, 4,363,678, Cl. 149-6.000.
Ishikawa, Hidekazu: *See*—
Nanjo, Toshio; Nakamura, Akinori; and Ishikawa, Hidekazu, 4,363,473, Cl. 266-187.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Nanjo, Toshio; Nakamura, Akinori; and Ishikawa, Hidekazu, 4,363,473, Cl. 266-187.000.

Ishizuki, Katsuro: *See—*
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.

Isono, Katsuo; Miyaoka, Senri; and Shinkai, Kinya, to Sony Corporation. Beam index type color television receiver. 4,364,083, Cl. 358-69.000.

Isshiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, to Sumitomo Electric Industries, Ltd. Optical character reading system. 4,364,023, Cl. 340-146.30H.

Istvan, Sandor: *See—*
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyuml/o/rgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,363,876, Cl. 435-253.000.

Itikawa, Kiyonosin: *See—*
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.

Ito, Kiyoshi: *See—*
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.

Itoh, Teturoh, to Mitsubishi Denki Kabushiki Kaisha. Method of electrically cutting materials with a wire-shaped electrode and apparatus for practicing the same. 4,363,948, Cl. 219-69.00W.

ITW Ateco GmbH: *See—*
Wibrow, Gunter, 4,363,160, Cl. 24-297.000.

Iuchi, Tohru: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, 4,363,677, Cl. 148-111.000.

Ives, Kenneth D., to United States Steel Corporation. Apparatus for measuring eccentricity of rolls. 4,363,172, Cl. 33-174.00Q.

Ives, Kenneth D., to United States Steel Corporation. Gas-entrained particulate feed system. 4,363,470, Cl. 266-81.000.

Iwamatsu, Noboru: *See—*
Kohzai, Yoshinori; Amemiya, Yoichi; Fujioka, Yoshiki; and Iwamatsu, Noboru, 4,364,005, Cl. 322-31.000.

Iwanaga, Kouichi: *See—*
Nasu, Sataro; Hara, Hikoyoshi; and Iwanaga, Kouichi, 4,363,169, Cl. 30-41.000.

Iwasaki, Kyuhachiro: *See—*
Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,364,060, Cl. 346-75.000.

Iwatsu Electric Co., Ltd.: *See—*
Shimizu, Kazunari, 4,364,036, Cl. 340-715.000.

Izumitani, Tetsuro: *See—*
Nakajima, Yuji; and Izumitani, Tetsuro, 4,363,852, Cl. 428-432.000.

J. Connell Associates: *See—*
Connell, James, 4,363,520, Cl. 301-37.00P.

J. I. Case Company: *See—*
Erickson, Terry D., 4,363,178, Cl. 37-191.00A.

Jackson, Carroll V.; and Rau, Blase C., to United Conveyor Corporation. System for feeding pulverulent material into a pressurized air conveyor pipeline. 4,363,571, Cl. 406-56.000.

Jacques, Steven L. Focusing probe for moisture measurement device. 4,364,008, Cl. 324-58.50R.

Jacquet, Bernard; Papantoniou, Christos; Land, Gerard; and Forestier, Serge, to Societe Anonyme dite: l'Oreal. Polyaspartic acid derivatives, their preparation and their use in cosmetic composition. 4,363,797, Cl. 424-70.000.

Jaggle, Gunther; Lang, Ernst; and Knapp, Heinrich, to Robert Bosch GmbH. Fuel injection nozzle. 4,363,446, Cl. 239-453.000.

Jakobs, Jurgen: *See—*
Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, 4,363,757, Cl. 252-628.000.

Jambor, Arno: *See—*
Schmidt, Adolf; Jambor, Arno; and Huber, Guntram, 4,363,838, Cl. 428-31.000.

Jamerson, Jackie D.: *See—*
Billig, Ernst; Bryant, David R.; and Jamerson, Jackie D., 4,363,764, Cl. 260-429.00R.

James River Corporation of Virginia: *See—*
VanderLugt, Thomas, Jr., 4,363,821, Cl. 426-393.000.

Janneck, Frank W.: *See—*
Hoffman, Melvin G.; and Janneck, Frank W., 4,363,208, Cl. 60-39.320.

Janssen Pharmaceutica N.V.: *See—*
Albert, Rudolf; Willemsens, Albert; and van der Veken, Guido, 4,363,918, Cl. 548-531.000.

Japan Steel Works, Ltd.: *See—*
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.

Jaques, Dean. Painter's holster. 4,363,433, Cl. 224-253.000.

Jarai, Miklos: *See—*
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyuml/o/rgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,363,876, Cl. 435-253.000.

Jardin, Hans: *See—*
Lutz, Alfons; and Jardin, Hans, 4,363,515, Cl. 296-222.000.

Jargiello, Paul; and Bosshardt, William, to Polychrome Corporation. Antibuckling apparatus for lithographic printing plates. 4,363,176, Cl. 34-4.000.

Jarvinen, Willard B.: *See—*
Cutler, John H.; Jarvinen, Willard B.; and Walker, Loren H., 4,364,007, Cl. 324-51.000.

Jeans, Edward L.: *See—*
Holben, Clair D.; and Jeans, Edward L., 4,363,424, Cl. 222-4.000.

Jekkel nee Bokany, Antonia: *See—*
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyuml/o/rgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,363,876, Cl. 435-253.000.

JENAer Glaswerk Schott & Gen.: *See—*
Scheidler, Herwig; and Keller, Gunther, 4,363,956, Cl. 219-464.000.

Jeno's Inc.: *See—*
Carlson, John L., 4,363,251, Cl. 83-105.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Drake, J. Michael; and Furumoto, Horace W., 4,364,015, Cl. 372-53.000.

Jibiki, Hiroshi: *See—*
Fukui, Kiyoshi; Kakeya, Noboru; Jibiki, Hiroshi; and Kita, Junichiro, 4,363,916, Cl. 548-313.000.

Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; and Kodama, Yutaka, to Ricoh Co., Ltd. Nozzle position deviation compensation arrangement for ink jet printing device. 4,364,060, Cl. 346-75.000.

Joanna Western Mills Company: *See—*
Holzer, Joseph C., 4,363,459, Cl. 248-265.000.

Jocz, Armin E., to Westran Corporation. Electronically controlled valve actuator. 4,364,111, Cl. 364-175.000.

Johansing, P. G., Jr. Hydraulic fluid cooling system. 4,363,356, Cl. 165-110.000.

Johansson, Sven L., to Innovationsteknik. Method of positively controlling, storing and transporting banknotes, and a safety cassette and banknote-infeed unit for carrying out the method. 4,363,279, Cl. 109-29.000.

Johnson, Eric C.: *See—*
Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., 4,363,810, Cl. 426-262.000.

Johnson, Lester. Pseudo electrode assembly. 4,363,989, Cl. 310-306.000.

Johnson, Robert M.; and Melling, Elmer M., to National Gypsum Company. Reinforced cement sheet product containing fibers other than asbestos, clay and thickener. 4,363,666, Cl. 106-90.000.

Johnston, Reece W., to Advance Dental Corporation. Method of affixing a dental appliance. 4,363,624, Cl. 433-9.000.

Joho, Reinhard; and Pohl, Herbert, to BBC Brown, Boveri & Company, Limited. Rotor of an electrical machine. 4,363,986, Cl. 310-214.000.

Jones, Andrew W.; and Merry, Raymond. Airfoil structure. 4,363,458, Cl. 244-153.00R.

Jossin, Alain: *See—*
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,363,909, Cl. 544-238.000.

Joubert, Raymond J. M.: *See—*
Bouiller, Jean G.; Pous, Jacques A. J.; and Joubert, Raymond J. M., 4,363,445, Cl. 239-265.350.

Joy Manufacturing Company: *See—*
Duff, John, 4,363,258, Cl. 91-165.000.
Howard, Thomas E., 4,363,519, Cl. 299-31.000.

Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., to Eastman Kodak Company. Polyester modified with alkyl- or alkenylsuccinic anhydrides. 4,363,908, Cl. 528-302.000.

Jungheinrich Unternehmensverwaltung KG, Firma: *See—*
Archer, Michael A., 4,364,047, Cl. 340-870.370.

Jungwirth, Dieter: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,363,462, Cl. 249-190.000.

Kabushiki Kaisha Audio-Technica: *See—*
Honma, Kimiyasu, 4,364,120, Cl. 369-138.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Nakamura, Joji; and Akanuma, Shigetake, 4,363,518, Cl. 299-14.000.

Kabushiki Kaisha Morita Kouken: *See—*
Morita, Takeshi; and Morita, Kiyoshi, 4,363,725, Cl. 209-257.000.

Kabushiki Kaisha Sato: *See—*
Sato, Yo; and Shibayama, Tooru, 4,363,268, Cl. 101-110.000.
Sato, Yo, 4,363,269, Cl. 101-110.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Koto, Haruhiko, 4,364,066, Cl. 346-140.00R.
Koto, Haruhiko; and Okada, Junichi, 4,364,067, Cl. 346-140.00R.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Hajime; and Arakawa, Akio, 4,364,002, Cl. 318-467.000.

Kaim, John W., to AMSTED Industries Incorporated. Type-E railroad car coupler head. 4,363,414, Cl. 213-147.000.

Kaiser, Klaus-Peter: *See—*
Viertel, Lothar; Kaiser, Klaus-Peter; and Nowak, Manfred, 4,363,511, Cl. 296-97.00K.

Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. Tobacco products containing oxygenated ionone derivatives. 4,363,331, Cl. 131-275.000.

Kaji, Kazusuke, to SI Handling Systems, Inc. Conveyor system and vehicle for use therein. 4,363,275, Cl. 104-166.000.

Kajiyama, Shigeo: *See—*
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,363,165, Cl. 29-564.800.

Kakenyaku Kako Co., Ltd.: *See—*
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.

Kakeya, Noboru: *See*—
Fukui, Kiyoshi; Kakeya, Noboru; Jibiki, Hiroshi; and Kita, Junichiro, 4,363,916, Cl. 548-313.000.
Kakimura, Michio: *See*—
Kawae, Yasunobu; and Kakimura, Michio, 4,363,701, Cl. 162-301.000.
Kaminski, Christopher A., to General Electric Company. Dual curved inlet gap pickup wedge. 4,363,982, Cl. 310-61.000.
Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,363,375, Cl. 180-227.000.
Kanamori, Takeshi: *See*—
Kimura, Yukichi; and Kanamori, Takeshi, 4,363,823, Cl. 426-542.000.
Kanazashi, Akihiro: *See*—
Toshimitsu, Kenshi; Kanazashi, Akihiro; and Kohyama, Mitsuaki, 4,363,550, Cl. 355-3.0TR.
Kanbe, Junichiro: *See*—
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, 4,363,861, Cl. 430-97.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,363,903, Cl. 526-273.000.
Kaneki, Satoru, to Dai Nippon Insatsu Kabushiki Kaisha. Photomask and photomask blank. 4,363,846, Cl. 428-203.000.
Kaneko, Shizuo: *See*—
Yoshida, Kazuyuki; Kaneko, Shizuo; Okawara, Mikio; and Hiroki, Terushige, 4,363,285, Cl. 118-19.000.
Kang, Jung W.: *See*—
Gunesin, Binnur; Hamed, Gary R.; Kang, Jung W.; and Schulz, Donald N., 4,363,897, Cl. 525-195.000.
Karol, Frederick J.: *See*—
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,363,904, Cl. 526-348.200.
Karpanty, David J., to Scott & Fetzer Company, The. Squeegee assembly for a scrubbing machine. 4,363,152, Cl. 15-98.000.
Kasahara, Masatoshi: *See*—
Matsuda, Yasumasa; Sagae, Syoji; Kasahara, Masatoshi; and Uchida, Hiroyasu, 4,364,070, Cl. 346-140.00R.
Kastl, Alfons: *See*—
Oberhoffner, Gerhard; Koninger, Horst; and Kastl, Alfons, 4,363,548, Cl. 354-298.000.
Katagiri, Shinjiro: *See*—
Katsuta, Teiji; Nishiwaki, Koji; and Katagiri, Shinjiro, 4,363,953, Cl. 219-121.0EK.
Katayama, Kazuo: *See*—
Watanabe, Kenichi; Katayama, Kazuo; and Kijima, Takao, 4,363,499, Cl. 280-775.000.
Kato, Yoji: *See*—
Kobayashi, Akihiro; Kida, Masashi; and Kato, Yoji, 4,363,958, Cl. 219-505.000.
Katsushima, Goji: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.
Katsuta, Teiji; Nishiwaki, Koji; and Katagiri, Shinjiro, to Hitachi, Ltd. Electron beam scribing method. 4,363,953, Cl. 219-121.0EK.
Kaveney, John R., Jr., to Caterpillar Tractor Co. Door lock. 4,363,231, Cl. 70-484.000.
Kawae, Yasunobu; and Kakimura, Michio, to Kyoto Ceramic Kabushiki Kaisha. Supporting member for paper-making screen in paper machines. 4,363,701, Cl. 162-301.000.
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purifying system for internal combustion engines. 4,363,210, Cl. 60-276.000.
Kawakami, Moriatsu: *See*—
Imamura, Yoshiyuki; and Kawakami, Moriatsu, 4,363,692, Cl. 156-351.000.
Kawamura, Duro: *See*—
Ohude, Masao; and Kawamura, Duro, 4,363,204, Cl. 53-381.00A.
Kawasaki Steel Corporation: *See*—
Shiga, Atsushi, 4,363,951, Cl. 219-73.000.
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.
Kawasaki, Takao; Osaka, Yoshiaki; and Tsuchiya, Tadashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. 2-(3,4,5-Trimethoxyphenyl)-4,5-disubstituted thiazoles. 4,363,813, Cl. 424-270.000.
Kawase, Yasuo: *See*—
Akimoto, Taizo; and Kawase, Yasuo, 4,364,084, Cl. 358-76.000.
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, to Aisin Seiki Kabushiki Kaisha. Safety circuit of automatic transmission control system. 4,363,973, Cl. 307-10.00R.
Kawesch, Stanley. Traction means on showering surfaces and method of producing the same. 4,363,145, Cl. 4-583.000.
Keck Consulting Services, Inc.: *See*—
Hilty, Robert D., 4,363,366, Cl. 175-314.000.
Keller, Alex J.; Fechner, Erchard A.; and Williams, Joseph R., to Automatic Material Handling, Inc. Bale level control system for mechanical hopper feeder. 4,363,585, Cl. 414-273.000.
Keller, Gunther: *See*—
Scheidler, Herwig; and Keller, Gunther, 4,363,956, Cl. 219-464.000.
Keller, Josef: *See*—
Eisend, Ewald; and Keller, Josef, 4,363,390, Cl. 192-46.000.
Kelly, Arnold J., to Exxon Research and Engineering Co. Method and apparatus for fluid jet printing. 4,364,054, Cl. 346-1.100.
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, to BASF Aktiengesellschaft. Polyadducts of ammonia and epoxide compounds, processes for their modification, and their use. 4,363,710, Cl. 204-181.00C.
Kendall, Kevin: *See*—
Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,363,667, Cl. 106-90.000.
Kennecott Corporation: *See*—
Kucheria, Chhattar S.; and Smith, Russell D., 4,363,199, Cl. 52-221.000.
Kenney, Donald M.: *See*—
Garnache, Richard R.; Kenney, Donald M.; and Thoma, Nandor G., 4,364,074, Cl. 357-23.000.
Kenyon, Eugene B. Apparatus for lining kilns, tunnels and the like. 4,363,202, Cl. 52-749.000.
Kerfeld, Donald J.: *See*—
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J., 4,363,844, Cl. 428-65.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, 4,363,757, Cl. 252-628.000.
Kida, Masashi: *See*—
Kobayashi, Akihiro; Kida, Masashi; and Kato, Yoji, 4,363,958, Cl. 219-505.000.
Kidde, Inc.: *See*—
Patel, Ramesh P.; and Bonnell, Alfred, Jr., 4,363,412, Cl. 212-196.000.
Kido, Jun-ichiro: *See*—
Wada, Isao; Kido, Jun-ichiro; and Koido, Kazuo, 4,363,700, Cl. 162-72.000.
Kijima, Takao: *See*—
Watanabe, Kenichi; Katayama, Kazuo; and Kijima, Takao, 4,363,499, Cl. 280-775.000.
Kikuchi, Masatsugu: *See*—
Tamai, Masayoshi; Ueda, Michio; and Kikuchi, Masatsugu, 4,364,058, Cl. 346-75.000.
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, to Chisso Corporation. Process for producing α-olefin polymers. 4,363,901, Cl. 526-97.000.
Kilgore, Raymond L. Free piston pump for pumping liquids from a well. 4,363,606, Cl. 417-59.000.
Kilin, Viktor E.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.
Kim Manufacturing Company: *See*—
Carroll, Joseph W., 4,363,460, Cl. 248-415.000.
Kimura, Toshio: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, 4,364,056, Cl. 346-29.000.
Kimura, Yukichi; and Kanamori, Takeshi, to Lion Corporation. Method of frying foods in the presence of a spice antioxidant. 4,363,823, Cl. 426-542.000.
Kirchhoff, Hans, to Schloemann-Siemag Aktiengesellschaft. Apparatus for conveying rolled stock. 4,363,394, Cl. 198-369.000.
Kirkpatrick, C. Virginia; and Watson, Grace E., to Mark Twain Bancshares. Bank training device. 4,363,628, Cl. 434-107.000.
Kirsch, Steven T. Electro-optical mouse. 4,364,035, Cl. 340-710.000.
Kiser, Robert W. Turbo-lubrication system. 4,363,214, Cl. 60-605.000.
Kishida, Kazuo: *See*—
Masuho, Yasuhiko; Kishida, Kazuo; and Hara, Takeshi, 4,363,758, Cl. 260-112.00B.
Kishimoto, Sumiyuki: *See*—
Iizuka, Motohiko; Nakatani, Genji; and Kishimoto, Sumiyuki, 4,363,655, Cl. 75-41.000.
Kita, Junichiro: *See*—
Fukui, Kiyoshi; Kakeya, Noboru; Jibiki, Hiroshi; and Kita, Junichiro, 4,363,916, Cl. 548-313.000.
Kita, Shigeyuki: *See*—
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, 4,364,017, Cl. 333-194.000.
Kitajima, Eiji: *See*—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.
Kitamura, Nobu: *See*—
Shirahata, Isao; Kitamura, Nobu; Nakamura, Nobuyuki; and Hori, Hisako, 4,363,899, Cl. 525-437.000.
Kiyohara, Etsuo: *See*—
Matsuda, Satoshi; and Kiyohara, Etsuo, 4,363,985, Cl. 310-184.000.
Klassen, Harold E.: *See*—
Settineri, William J.; Klassen, Harold E.; and Tolly, Milton C., 4,363,673, Cl. 134-2.000.

Klawitter, Ronald R., to Steven Manufacturing Company. Roller skate. 4,363,494, Cl. 280-11.280.

Klein, Eugene M.: *See*—
Dresty, John E., Jr.; and Klein, Eugene M., 4,363,722, Cl. 209-3.000.

Kleptz, Charles F. Method for producing a restructured meat product. 4,363,822, Cl. 426-513.000.

Klessing, Klaus; Chatterjee, Shyam S.; and Gabard, Bernard L., to Willmar Schwabe, Firma. Aminodesoxy-1.4;3.6-dianhydrohexitol nitrates and pharmaceutical composition. 4,363,805, Cl. 424-230.000.

Kliman, Gerald B., to General Electric Company. Induction disk motor with metal tape components. 4,363,988, Cl. 310-268.000.

Klockner-Humboldt-Deutz AG: *See*—
Herchenbach, Horst, 4,363,668, Cl. 106-100.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Pischinger, Franz, 4,363,302, Cl. 123-337.000.
Stock, Hugo; and Tholen, Paul, 4,363,301, Cl. 123-321.000.

Klotz, Marvin R., to Standard Oil Company (Indiana). Crystalline chromosilicates and process uses. 4,363,718, Cl. 208-110.000.

Knapp, Heinrich: *See*—
Jaggle, Gunther; Lang, Ernst; and Knapp, Heinrich, 4,363,446, Cl. 239-453.000.

Kniazzeh, Alfredo G.: *See*—
Buckler, Sheldon A.; Burns, Jeffrey B.; Kniazzeh, Alfredo G.; Plasse, Paul A.; and Sullivan, David J., 4,363,407, Cl. 209-3.300.

Knitter, Kathy A.; and Villa, Jose L., to Diamond Shamrock Corporation. Stabilized oil slurries of carbonaceous materials. 4,363,637, Cl. 44-51.000.

Knoll, Frank S.; Taylor, Joseph B.; and Hoyles, Peter J., to Carpco, Inc. Multifield electrostatic separator. 4,363,723, Cl. 209-128.000.

Knops, Hans-Joachim: *See*—
Heine, Hans-Georg; Knops, Hans-Joachim; and Priesnitz, Uwe, 4,363,926, Cl. 556-442.000.

Knowlton, Christopher M., to Scott & Fetzer Company, The. Riding sweeper with high dump mechanism. 4,363,151, Cl. 15-83.000.

Koa Oil Company, Limited: *See*—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.

Kobayashi, Akihiro; Kida, Masashi; and Kato, Yoji, to Nippon Soken, Inc. Preheating apparatus for diesel engines. 4,363,958, Cl. 219-505.000.

Kobayashi, Hiroshi, to Ricoh Co., Ltd. Multi-ink jet head. 4,364,069, Cl. 346-140.00R.

Kobayashi, Masahiro: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,363,165, Cl. 29-564.800.
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,363,903, Cl. 526-273.000.

Kobayashi, Tohru: *See*—
Shibue, Toshiaki; Nagayasu, Koichi; Kobayashi, Tohru; and Tokitou, Kouji, 4,363,871, Cl. 430-523.000.

Koberstein, Edgar: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,363,753, Cl. 252-477.00R.

Kodama, Churyo, to Hitachi, Ltd. Fluorescent lamp having reflective layer. 4,363,997, Cl. 313-487.000.

Kodama, Yutaka: *See*—
Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,364,060, Cl. 346-75.000.

Kohyama, Mitsuaki: *See*—
Toshimitsu, Kenshi; Kanazashi, Akihiro; and Kohyama, Mitsuaki, 4,363,550, Cl. 355-3.0TR.

Kohzai, Yoshinori; Amemiya, Yoichi; Fujioka, Yoshiki; and Iwamatsu, Noboru, to Fujitsu Fanuc Limited. Brushless tachometer generator. 4,364,005, Cl. 322-31.000.

Koido, Kazuo: *See*—
Wada, Isao; Kido, Jun-ichiro; and Koido, Kazuo, 4,363,700, Cl. 162-72.000.

Koizumi, Shun: *See*—
Shimizu, Tetsuo; and Koizumi, Shun, 4,363,900, Cl. 526-83.000.

Koizumi, Yoshihito: *See*—
Fukuda, Tetsuro; Matsuura, Hideo; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,363,826, Cl. 426-653.000.

Kokubo, Eiichi, to Laurel Bank Machine Co., Ltd. Paper sheet accumulator assembly and bank note dispenser provided therewith. 4,363,584, Cl. 414-33.000.

Kolarik, Luis O.: *See*—
Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., 4,363,749, Cl. 252-455.00R.

Kolmyk, Evgeny S.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.

Komarek, Ernst, to Bayer Aktiengesellschaft. Process for the production of imitation suedes by the reversal process. 4,363,686, Cl. 156-242.000.

Kondo, Akinobu: *See*—
Nakamura, Kazuharu; Matsumoto, Motoki; and Kondo, Akinobu, 4,363,621, Cl. 431-90.000.

Kondo, Isao; and Nakajima, Yukio, to Olympus Optical Company Ltd. Camera and electronic flash combination. 4,363,542, Cl. 354-31.000.

Kondo, Mitsushige: *See*—
Okada, Kazuo; and Kondo, Mitsushige, 4,363,961, Cl. 250-201.000.

Kondo, Tokio; and Morishige, Ryuma. Earthquake-proof shoe for bridges. 4,363,149, Cl. 14-16.100.

Koninger, Horst: *See*—
Oberhoffner, Gerhard; Koninger, Horst; and Kastl, Alfons, 4,363,548, Cl. 354-298.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Shibue, Toshiaki; Nagayasu, Koichi; Kobayashi, Tohru; and Tokitou, Kouji, 4,363,871, Cl. 430-523.000.

Konno, Kiyotaka: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Kopel, LeRoy, to Advanced Diagnostic Research Corporation. Ultrasonic apparatus for needle insertion. 4,363,326, Cl. 128-660.000.

Koseki, Yasuo; Yamada, Akira; Nishimura, Yuusaku; and Takahashi, Sankichi, to Hitachi, Ltd. Method and system of heat energy conversion. 4,363,219, Cl. 62-101.000.

Kossove, Michael. Breathing airway. 4,363,320, Cl. 128-207.140.

Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, to Kernforschungszentrum Karlsruhe GmbH. Method for noncontaminating solidification for final storage of aqueous, radioactive waste liquids. 4,363,757, Cl. 252-628.000.

Koto, Haruhiko, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Ink jet printing head. 4,364,066, Cl. 346-140.00R.

Koto, Haruhiko; and Okada, Junichi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Highly integrated ink jet head. 4,364,067, Cl. 346-140.00R.

Koulbanis, Constantin: *See*—
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, 4,363,796, Cl. 424-61.000.

Kovacs, Bela V., to Ford Motor Company. Method for increasing mechanical properties in ductile iron by alloy additions. 4,363,661, Cl. 75-130.00R.

Kowbuz, Miro F., to UOP Inc. Process for the production of high purity iron powder. 4,363,652, Cl. 75-0.5AA.

Koyama, Masataka; Satoh, Kiyoshi; and Terashima, Minoru, to Fujitsu Limited. Tantalum thin film capacitor. 4,364,099, Cl. 361-305.000.

Koyanagi, Katubumi: *See*—
Take, Hiroshi; Koyanagi, Katubumi; and Uede, Hisashi, 4,364,040, Cl. 340-785.000.

Krappel, Alfred: *See*—
Fritz, Adolf R.; Gottschick, Michael; Krappel, Alfred; and Guggenmos, Johannes, 4,363,304, Cl. 123-418.000.

Krauter, Imanuel: *See*—
Honig, Gunter; Braunger, Joachim; Krauter, Imanuel; and Bone, Rainer, 4,363,979, Cl. 307-519.000.

Krautkramer-Branson Incorporated: *See*—
Renzel, Peter; and Kroesen, Klaus, 4,364,114, Cl. 364-565.000.

Kremen, Jerome C.: *See*—
Achter, Eugene K.; Kremen, Jerome C.; Rodriguez, Rodolfo R.; and Priarone, Paolo, 4,363,551, Cl. 356-338.000.

Krespan, Carl G.; and Darling, Thomas R., to Du Pont de Nemours, E. I., and Company. Perfluorodiglycidyl ethers. 4,363,898, Cl. 525-404.000.

Kresse, Horst: *See*—
Demus, Dietrich; Weissflog, Wolfgang; Zaschke, Horst; Wolff, Rudolf; and Kresse, Horst, 4,363,767, Cl. 260-463.000.

Krevitz, Kenneth: *See*—
Soberman, Robert K.; Krevitz, Kenneth; and Pytlewski, Louis L., 4,363,965, Cl. 250-302.000.

Kroesen, Klaus: *See*—
Renzel, Peter; and Kroesen, Klaus, 4,364,114, Cl. 364-565.000.

Kruder, George A., to HPM Corporation. Method of injection molding employing multichannel wave screw. 4,363,768, Cl. 264-68.000.

Kruger, Joseph A., to Brock Manufacturing, Inc. Bulk bin feed delivery apparatus. 4,363,428, Cl. 222-227.000.

Kubo, Kikuo: *See*—
Ebi, Yutaka; and Kubo, Kikuo, 4,364,057, Cl. 346-75.000.

Kubota, Yutaka, to Stanley Electric Co. Apparatus for inspecting whether an object is good or bad. 4,364,088, Cl. 358-106.000.

Kubotera, Kikuo: *See*—
Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, 4,363,829, Cl. 427-53.100.

Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z. Apparatus for receiving incandescent coke. 4,363,702, Cl. 202-262.000.

Kucheria, Chhattar S.; and Smith, Russell D., to Kennecott Corporation. Fire resistant sealing system for holes in fire resistant building partitions. 4,363,199, Cl. 52-221.000.

Kuehn, Howard E., to USM Corporation. Crown roll seal arrangement sealed by lubricating oil in labyrinth. 4,363,490, Cl. 277-15.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Method of making photoconductive coating. 4,363,711, Cl. 204-192.00P.

Kugler, Artur: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,363,389, Cl. 192-0.042.

Kuhlman, Harry S.; and Wyvill, Jeffrey R., III, to Combustion Engineering, Inc. Wide range noble gas radiation monitor. 4,363,972, Cl. 250-430.000.

Kuhn, John B., to Outboard Marine Corporation. Lawn mower brake and starter. 4,363,298, Cl. 123-179.00S.

Kulprathipanja, Santi, to UOP Inc. Separation process using cellulose acetate butyrate bound zeolite adsorbents. 4,363,672, Cl. 127-46.300.
Kummer, Emanuel: *See*—
Machler, Ernst; and Kummer, Emanuel, 4,363,448, Cl. 241-10.000.
Kummermehr, Hans, to Grunzweig + Hartmann und Glasfaser AG. Process for making a thermal insulating body. 4,363,738, Cl. 252-62.000.
Kumura, Yukimasa: *See*—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.
Kunczynski, Jan K. Cable derailment responsive apparatus. 4,363,945, Cl. 200-61.180.
Kung, Hank F.: *See*—
Blau, Monte; and Kung, Hank F., 4,363,793, Cl. 424-1.000.
Kung Hsue She Educational Supplies Co., Ltd.: *See*—
Hsieh, C. L., 4,363,561, Cl. 403-92.000.
Kung, Patrick C.; and Goldstein, Gideon, to Ortho Pharmaceutical Corporation. Monoclonal antibody to human T cells, and methods for preparing same. 4,363,799, Cl. 424-85.000.
Kunkler, Hans: *See*—
Hilbig, Josef; Holst, Arno; Kunkler, Hans; Stolting, Klaus; and Schminke, Wolfgang, 4,363,784, Cl. 422-134.000.
Kunz, Lee R.; and Tebbit, Guy L., to Wildlife Vaccines, Inc. Method and apparatus for automated immersion treatment of fish. 4,363,290, Cl. 119-3.000.
Kuraishi, Yoshiaki: *See*—
Makabe, Takayoshi; and Kuraishi, Yoshiaki, 4,364,006, Cl. 323-353.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; and Tsuchiya, Tadashi, 4,363,813, Cl. 424-270.000.
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, to Kakenyaku Kako Co., Ltd. 3-(Tetrazol-5-yl), 4-methyl-8-alkoxy coumarins and anti-allergic compositions thereof. 4,363,812, Cl. 424-269.000.
Kurz, Dieter, to Wacker-Chemie GmbH. Process and heavy metal catalyst for the polymerization of α-olefins, particularly polyethylene. 4,363,902, Cl. 526-114.000.
Kusano, Masaaki, to Hitachi, Ltd. Semiconductor speech path switch. 4,364,044, Cl. 340-825.850.
Kusserow, Bernd, to Siemens Aktiengesellschaft. Electromedical apparatus. 4,363,324, Cl. 128-419.00R.
Kuze, Yoshikazu. Photoelectric write-only sequence controller. 4,363,960, Cl. 235-454.000.
Kvita, Vratislav: *See*—
Fischer, Walter; Kvita, Vratislav; and Zweifel, Hans, 4,363,917, Cl. 548-480.000.
Kwan, Stephen C.: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.
Kyburz, Emilio: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Kyoto Ceramic Kabushiki Kaisha: *See*—
Kawae, Yasunobu; and Kakimura, Michio, 4,363,701, Cl. 162-301.000.
La Perche: *See*—
Rosell, Jean, 4,363,506, Cl. 292-336.300.
la Telemecanique Electrique: *See*—
Lucas, Gerard; and Hardouin, Pierre, 4,363,180, Cl. 40-316.000.
Lacelle, Gilles. Ski traction device. 4,363,497, Cl. 280-604.000.
Lam, Anthony C. Light display device with travelling balls and compound rotation. 4,364,106, Cl. 362-272.000.
Lamarque, Bernard: *See*—
Dejoie, Paul; and Lamarque, Bernard, 4,363,444, Cl. 239-177.000.
Lamparsky, Dietmar: *See*—
Kaiser, Roman; and Lamparsky, Dietmar, 4,363,331, Cl. 131-275.000.
Lancaster, Jesse F., to Dynatech Laboratories, Incorporated. Electrical jack and patch cord assemblies. 4,363,531, Cl. 339-107.000.
Land, Gerard: *See*—
Jacquet, Bernard; Papantoniou, Christos; Land, Gerard; and Forestier, Serge, 4,363,797, Cl. 424-70.000.
Lander, Lynn H.: *See*—
Sepulveda, Ralph R.; and Lander, Lynn H., 4,363,756, Cl. 252-550.000.
Landoni, Gianluigi: *See*—
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, 4,363,906, Cl. 528-248.000.
Lang, Ernst: *See*—
Jaggle, Gunther; Lang, Ernst; and Knapp, Heinrich, 4,363,446, Cl. 239-453.000.
Lang, Timothy R.; and Casimir, Donald J., to Howden Equipment Services Pty. Ltd.; and Commonwealth Scientific and Industrial Research Organisation. Counter current diffusion extractor. 4,363,264, Cl. 99-510.000.
Langen, Peter. Feed pipe for conveying sticky bulk material. 4,363,391, Cl. 193-2.00D.
Larkin, Simon J.: *See*—
Belliveau, Raymond E.; and Larkin, Simon J., 4,363,556, Cl. 374-183.000.
Larsen, Richard R., to Pacific Scientific Company. Diaphragm dispenser. 4,363,423, Cl. 221-82.000.
Laskaris, Evangelos T., to General Electric Company. Means to reduce frictional heating of a superconducting winding at an interface with its support structure. 4,363,981, Cl. 310-52.000.
Laurel Bank Machine Co., Ltd.: *See*—
Imamura, Yoshiyuki; and Kawakami, Moristsu, 4,363,692, Cl. 156-351.000.
Kokubo, Eiichi, 4,363,584, Cl. 414-33.000.
Laurich-Trost, Victor R. Multi-purpose utility vehicle. 4,363,409, Cl. 212-184.000.
Leavitt, Larry: *See*—
Leavitt, Larry J.; and Madigan, John E., 4,363,286, Cl. 118-31.500.
Leavitt, Larry J.; and Madigan, John E., to Leavitt, Larry. Fingerprinting packet. 4,363,286, Cl. 118-31.500.
Leblanc, Raymond F.; and Cummins, William T., to Teledyne Industries, Inc. Anti-pull-out bumper. 4,363,474, Cl. 267-140.000.
Lednikov, Anatoly I.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.
Ledoux, Pierre: *See*—
DeCeuster, Jean; Essemaeker, Paul; Bouillet, Edmond; Decamps, Alain; and Ledoux, Pierre, 4,363,699, Cl. 162-71.000.
Le Du, Yannick: *See*—
Meiller, Francois; and Le Du, Yannick, 4,363,733, Cl. 210-727.000.
Le Duc, Edward C.; and Schubert, John C., to Standard Oil Company (Indiana). Three layered foam-containing laminate suitable for use as an automobile headliner. 4,363,848, Cl. 428-286.000.
Lee, Raymond: *See*—
Gagliani, John; and Lee, Raymond, 4,363,690, Cl. 156-307.500.
Gagliani, John; and Lee, Raymond, 4,363,883, Cl. 521-122.000.
Lee, Robert K. Machine for removing ink from overhead projector rolls. 4,363,154, Cl. 15-102.000.
Leep, Gus W., to Seymour of Sycamore, Inc. Solvent resin emulsion enamel composition. 4,363,887, Cl. 523-402.000.
Legrand, Pierre: *See*—
Roullet, Gilbert; and Legrand, Pierre, 4,363,840, Cl. 428-35.000.
Leiberich, Hermann: *See*—
Schmidt, Manfred; Hoyer, Gerd; Leiberich, Hermann; and Pietschmann, Helmut, 4,363,626, Cl. 433-85.000.
Leinfelt, Karl E., to Aktiebolaget Electrolux. Vacuum cleaner dust container having compressing means associated therewith. 4,363,156, Cl. 15-327.00R.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Auld, Bertram A., 4,364,012, Cl. 324-237.000.
Lesher, George Y.; and Brundage, Ruth P., to Sterling Drug Inc. 1,2-Dihydro-6-[2-(dimethylamino)ethenyl]-2-oxo-5-(pyridinyl) nicotinonitriles. 4,363,911, Cl. 546-257.000.
Leskinen, Seppo J., to OY Nokia AB. Impeller in a centrifugal blower. 4,363,601, Cl. 416-188.000.
Le Van, Tiu: *See*—
Daaboul, Fouad; Le Van, Tiu; and Fung, Kit-Chung, 4,363,938, Cl. 179-170.200.
Lever Brothers Company: *See*—
Curtis, Michael; Garrett, Peter R.; and Mead, John, 4,363,740, Cl. 252-91.000.
Sepulveda, Ralph R.; and Lander, Lynn H., 4,363,756, Cl. 252-550.000.
Levinson, Lionel M., to General Electric Company. Low voltage varistor configuration. 4,364,021, Cl. 338-20.000.
Lewis, Arthur M., to Exxon Research & Engineering Company. Ink jet construction and method of construction. 4,364,068, Cl. 346-140.00R.
Lewis, Phillip W., to Container Corporation of America. Display carton with internal spacer. 4,363,400, Cl. 206-44.00R.
Lewis, Terry W.; Anderson, Roger J.; and Kerfeld, Donald J. Metallized information carrying discs. 4,363,844, Cl. 428-65.000.
Lewis, William C., Jr.: *See*—
Bachman, David L.; Lewis, William C., Jr.; Schultz, Peter C.; and Voorhees, Francis W., 4,363,647, Cl. 65-18.200.
Liao, John C.: *See*—
Custard, Elizabeth; Liao, John C.; and Ponzo, John L., 4,363,632, Cl. 8-506.000.
Liautaud, John R. Eye wash fountain. 4,363,146, Cl. 4-620.000.
Liba Maschinenfabrik GmbH: *See*—
Wunner, Roland, 4,363,224, Cl. 66-120.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Wendland, Broder, 4,364,090, Cl. 358-140.000.
Likhogub, Evgeny P.: *See*—
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.
Lin, Kou C.; and Ellis, Belvin B., to Westinghouse Electric Corp. Amorphous metal core laminations. 4,364,020, Cl. 336-212.000.
Lincoln Electric Company, The: *See*—
Crockett, Dennis D.; and Weaver, Robert J., 4,363,676, Cl. 148-24.000.
Lindauer, Thomas: *See*—
Hesch, Harold; DiLuigi, Michael; and Lindauer, Thomas, 4,363,578, Cl. 410-56.000.
Linde, George J.: *See*—
Waters, William M.; and Linde, George J., 4,364,048, Cl. 343-5.0EM.

Lindquist, Carl, to Pennsylvania Sewing Research Corp. Sewing machine attachments. 4,363,280, Cl. 112-105.000.

Link, Erich: *See*—
Heidt, Alfred; Link, Erich; and Ortlieb, Wolfgang, 4,364,001, Cl. 318-371.000.

Lion Corporation: *See*—
Kimura, Yukichi; and Kanamori, Takeshi, 4,363,823, Cl. 426-542.000.
Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,363,794, Cl. 424-52.000.
Uchino, Noriyuki; and Ono, Toru, 4,363,755, Cl. 252-545.000.

Liotta, Ronald; and Gorbaty, Martin L., to Exxon Research and Engineering Co. O-Alkylated/O-acylated coal liquids. 4,363,714, Cl. 208-14.000.

Lipowski, Stanley A.; and Miskel, John J., Jr., to Diamond Shamrock Corporation. Preparation of amphoteric water-in-oil self-inverting polymer emulsion. 4,363,886, Cl. 523-336.000.

Lippok, Peter: *See*—
Hodes, Erich; Steeg, Michael; and Lippok, Peter, 4,363,854, Cl. 428-632.000.

Lipschutz, Paul, to SODEX-MAGISTER, Societe d'Exploitation des Brevets Neiman. Cylindrical locks. 4,363,230, Cl. 70-370.000.

Lischick, K. Edward. Separable fastening device. 4,363,159, Cl. 24-201.0HH.

Lloyd, Elliott: *See*—
Efkeman, Edward J.; Lloyd, Elliott; Dickson, Howard K.; and Adamson, James R., Jr., 4,363,967, Cl. 250-339.000.

Lo, Jiung-P'eng. Door lock construction. 4,363,227, Cl. 70-144.000.

Load Cells Inc.: *See*—
Sarkison, Warren, 4,363,370, Cl. 177-210.00R.

Locatelli, Jean-Louis, to Rhone-Poulenc Industries. Glass reinforced polyamide compositions having improved impact strengths. 4,363,894, Cl. 524-494.000.

Locatelli, Renato: *See*—
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, 4,363,906, Cl. 528-248.000.

Logan, David J.: *See*—
Sinclair, Robert I.; Anderson, Verner; Logan, David J.; and Rich, Leonard G., 4,363,330, Cl. 131-105.000.

London, Wallace; and Meyer, Kurt L., to London, Wallace. Garment bag unit. 4,363,388, Cl. 190-41.00B.

Long, John W.; and Vacek, Lubomir, to Sherwin-Williams Company, The. Preparation of benzotriazoles. 4,363,914, Cl. 548-257.000.

Loose, Winfield W., to AMP Incorporated. Terminal having improved mounting means. 4,363,529, Cl. 339-17.00C.

Lopez, Alfred R., to Hazeltine Corporation. Microstrip antenna. 4,364,050, Cl. 343-700.0MS.

Lorenzi, Donald E.: *See*—
Schaefer, Edward F.; Lozynski, Lawrence R.; and Lorenzi, Donald E., 4,363,545, Cl. 354-63.000.

Loughmiller, Bert E., to APM, Inc. Wine cork. 4,363,416, Cl. 215-364.000.

Lozynski, Lawrence R.: *See*—
Schaefer, Edward F.; Lozynski, Lawrence R.; and Lorenzi, Donald E., 4,363,545, Cl. 354-63.000.

Lucas, Gerard; and Hardouin, Pierre, to la Telemecanique Electrique. Cable ferrule identification. 4,363,180, Cl. 40-316.000.

Lucas Industries Limited: *See*—
Anderson, Robert A., 4,363,382, Cl. 188-71.400.

Ludwig, George C., to AVM Corporation. Valve, particularly crossover passage valve. 4,363,309, Cl. 123-552.000.

Ludwig, Peter; and Horstermann, Heinrich. Belt conveyor. 4,363,399, Cl. 198-833.000.

Luebben, Manfred; and Witt, Wolfram, to Rheinmetall GmbH. Ammunition with protective surface layer and method of making same. 4,363,273, Cl. 102-431.000.

Lund, Raymond R., to Canron Corporation. Center line follower. 4,363,274, Cl. 104-2.000.

Luthi, Rudolf: *See*—
Bloeck, Siegfried; and Luthi, Rudolf, 4,363,582, Cl. 413-12.000.

Lutz, Alfons; and Jardin, Hans, to Webasto-Werk W. Baier GmbH and Co. Motor vehicle sliding top. 4,363,515, Cl. 296-222.000.

Lynch, Robert F.: *See*—
Poirier, Victor L.; Buczak, Stanley D.; Lynch, Robert F.; and Salvo, Thomas R., 4,363,328, Cl. 128-728.000.

MacDonald, Murdo A.: *See*—
Ginther, Gary D.; and MacDonald, Murdo A., 4,363,573, Cl. 406-76.000.

Machler, Ernst; and Kummer, Emanuel, to Gebruder Buhler AG. Milling of cereals and the like. 4,363,448, Cl. 241-10.000.

Macho, Leo: *See*—
Burst, Hermann; and Macho, Leo, 4,363,510, Cl. 296-37.160.

Mackall, Kenneth, Jr.; and Noling, Richard. Towing attachment for vehicles. 4,363,591, Cl. 414-563.000.

MacKenzie, Colin N. P. Tunnelling. 4,363,565, Cl. 405-146.000.

Madgavkar, Ajay M.; and Vogel, Roger F., to Gulf Research & Development Company. Substoichiometric combustion of low heating value gases. 4,363,361, Cl. 166-256.000.

Madigan, John E.: *See*—
Leavitt, Larry J.; and Madigan, John E., 4,363,286, Cl. 118-31.500.

Maeda, Mamoru: *See*—
Takasaki, Kanetake; and Maeda, Mamoru, 4,363,868, Cl. 430-314.000.

Maeda, Takeshi; Shigematsu, Kazuo; and Yonezawa, Seiji, to Hitachi, Ltd. Optical disk and optical information processor. 4,364,118, Cl. 369-44.000.

Magerlein, Barney J.; and Whaley, Howard A., to Upjohn Company, The. Esters of antibiotic nodusmicin. 4,363,922, Cl. 549-266.000.

Magnaflux Corporation: *See*—
Schaefer, Edward F.; Lozynski, Lawrence R.; and Lorenzi, Donald E., 4,363,545, Cl. 354-63.000.

Magnetic Controls Company: *See*—
Nelson, Calvin G., 4,363,941, Cl. 200-1.00R.

Makabe, Takayoshi; and Kuraishi, Yoshiaki, to Nippon Electric Co., Ltd. Reference voltage generator for use in an A/D or D/A converter. 4,364,006, Cl. 323-353.000.

Makai, Alexander J.: *See*—
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,363,904, Cl. 526-348.200.

Makarov, Alexei M.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.

Manian, Harry. Mail delivery signal device for mailboxes. 4,363,439, Cl. 232-35.000.

Maraschin, Norma J.: *See*—
Fraser, William A.; Maraschin, Norma J.; Karol, Frederick J.; and Makai, Alexander J., 4,363,904, Cl. 526-348.200.

Marass, Josef, to Georg Spiess GmbH. Automatic reel change system. 4,363,695, Cl. 156-504.000.

Marchisio, Giovanni, to Giovanni Marchisio & C. S.r.l. Creel for circular knitting machines. 4,363,225, Cl. 66-125.00R.

Marcolina, Gene A., to Holl, Gordon D., a part interest. Disposable rodent trap. 4,363,184, Cl. 43-85.000.

Marcus, Konrad H., to Prince Corporation. Auxiliary visor. 4,363,512, Cl. 296-97.00G.

Mariani, Eliseo O. Biomass gas producer. 4,363,638, Cl. 48-111.000.

Marienfeld, Gottfried: *See*—
Gessler, Hans; and Marienfeld, Gottfried, 4,363,586, Cl. 414-311.000.

Mark Twain Bancshares: *See*—
Kirkpatrick, C. Virginia; and Watson, Grace E., 4,363,628, Cl. 434-107.000.

Markham, Larry D.; and Eklund, Henrik J., to Black Clawson Company, The; and Air Products and Chemicals, Inc. Method for medium consistency oxygen delignification of pulp. 4,363,697, Cl. 162-19.000.

Marko, Magda; and Welle, Hendricus B. A., to Sandoz Ltd. Organic compounds. 4,363,809, Cl. 424-260.000.

Markovits, Gary: *See*—
Edmonds, Harold D.; and Markovits, Gary, 4,364,100, Cl. 361-395.000.

Maroth, Arthur M.; and Maroth, Sybil. Swing force indicator for playing piece of sports equipment. 4,363,488, Cl. 273-186.00A.

Maroth, Sybil: *See*—
Maroth, Arthur M.; and Maroth, Sybil, 4,363,488, Cl. 273-186.00A.

Marshall, Steven; and Papaluca, Vincent, to ACI Operations Pty. Ltd. Liquid fill apparatus. 4,363,203, Cl. 53-109.000.

Martin, Henry; and Thompson, Charles R., to Dofasco Inc. Stabilizing high speed railway truck safety device. 4,363,277, Cl. 105-201.000.

Martin, Jack R., to General Electric Company. Composite air foil and disc assembly. 4,363,602, Cl. 416-230.000.

Martin, Lucien: *See*—
Prigent, Michel; and Martin, Lucien, 4,363,707, Cl. 204-129.000.

Martin, Robert C.: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.

Maruo, Shigeaki: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Maruyama, Masanori: *See*—
Mizushima, Masashi; Maruyama, Masanori; Ehata, Shigeru; and Fukushima, Masakazu, 4,363,996, Cl. 313-449.000.

Marvin Glass & Associates: *See*—
Breslow, Jeffrey D.; Harper, Rex M.; and Glickson, David A., 4,363,484, Cl. 273-85.00G.
Holahan, Edward T.; and Meyer, Burton C., 4,364,104, Cl. 362-223.000.

Mashimo, Yukio: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.

Massey-Ferguson Inc.: *See*—
Richardson, Leonard H.; Mueller, Otto, Jr.; and Elfes, Lee E., 4,363,384, Cl. 188-72.700.

Masstron Scale Inc.: *See*—
Susor, William C., 4,363,369, Cl. 177-163.000.

Mast, Richard: *See*—
Bellatty, Thomas A.; Zadik, Joseph S.; and Mast, Richard, 4,364,034, Cl. 340-690.000.

Masubuchi, Hiroshi, to Tonka Corporation. Vehicle with gear-changing mechanism including two displaceable gears. 4,363,185, Cl. 46-209.000.

Masuda, Eiji; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrating analog to digital converter having offset error compensation. 4,364,028, Cl. 340-347.0NT.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; and Chiba, Toshiyuki, 4,363,807, Cl. 424-246.000.

Masuho, Yasuhiko; Kishida, Kazuo; and Hara, Takeshi, to Teijin Limited. Cytotoxic protein hybrid and process for the preparation thereof. 4,363,758, Cl. 260-112.00B.

Masuy, Jean-Marie: *See*—
Ponghis, Nikolas; and Masuy, Jean-Marie, 4,363,656, Cl. 75-42.000.

Mateja, Ludvik; and Prasek, Josef, to Motor Jihlava narodni podnik. Arrangement for electrospark working of internal conical surfaces of metal parts. 4,363,950, Cl. 219-69.00R.

Matkin, David A., to British-American Tobacco Company Limited. Tobacco-smoke filters. 4,363,333, Cl. 131-334.000.

Matsuda, Satoshi; and Kiyohara, Etsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Pole change dynamo-electric machines. 4,363,985, Cl. 310-184.000.

Matsuda, Yasumasa; Sagae, Syoji; Kasahara, Masatoshi; and Uchida, Hiroyasu, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Drop jet apparatus. 4,364,070, Cl. 346-140.00R.

Matsui, Hirotoshi, to Sharp Kabushiki Kaisha. Paper edge detection in a printer. 4,364,062, Cl. 346-75.000.

Matsumoto, Motoki: *See*—
Nakamura, Kazuharu; Matsumoto, Motoki; and Kondo, Akinobu, 4,363,621, Cl. 431-90.000.

Matsumoto, Muneaki: *See*—
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,363,210, Cl. 60-276.000.

Matsumura, Rumiko, legal representative: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Matsumura, Shingo, deceased (by Matsumura, Rumiko, legal representative); Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, to Nippon Shinyaku Co. Ltd. Moranoline derivatives. 4,363,802, Cl. 424-180.000.

Matsunaga, Akira: *See*—
Nishimura, Naozumi; Matsunaga, Akira; and Ishii, Yasuo, 4,363,678, Cl. 149-6.000.

Matsushita Electric Industrial Company, Limited: *See*—
Yamamori, Kiyoshi; Hiromori, Yasutaka; and Mizoguchi, Akira, 4,364,065, Cl. 346-140.00R.
Yamazaki, Osamu; Inohara, Junichi; Tazuke, Kazuo; and Wasa, Kiyotaka, 4,363,990, Cl. 310-313.00C.

Matsushita Electric Works, Ltd.: *See*—
Nasu, Sataro; Hara, Hikoyoshi; and Iwanaga, Kouichi, 4,363,169, Cl. 30-41.000.

Matsuura, Hideo: *See*—
Fukuda, Tetsuro; Matsuura, Hideo; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,363,826, Cl. 426-653.000.

Matsuura, Takeshi: *See*—
Yasui, Masaaki; Matsuura, Takeshi; and Watatani, Seiji, 4,363,850, Cl. 428-329.000.

Matsuura, Tsuyoshi: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,363,541, Cl. 354-23.00D.

Mattel, Inc.: *See*—
Chodak, Jan B.; and Tran, Luan G., 4,363,489, Cl. 273-237.000.
Hall, Henry H., 4,363,487, Cl. 273-147.000.

Mattori, Horoaki; and Tateishi, Iwao, to Sharp Kabushiki Kaisha. Anti-skid controller system. 4,363,523, Cl. 303-92.000.

Matz, Duane G., to BS&B Safety Systems, Inc. Knife blade apparatus for severing rupture disks. 4,363,418, Cl. 220-89.00A.

Maute, Willy: *See*—
Willi, Albert; Maute, Willy; and Mooser, Oswaldo, 4,363,824, Cl. 426-589.000.

Maxsted, Malcolm D.: *See*—
Dixon, Robert L.; and Maxsted, Malcolm D., 4,363,367, Cl. 175-340.000.

Mayes, Alan P.: *See*—
Bryer, James E.; Mayes, Alan P.; and Allen, Keith, 4,363,168, Cl. 29-869.000.

McBride, Edward D.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,363,629, Cl. 440-61.000.

McCarty, Robert W. Vise-like C-clamp for gripping variously shaped work pieces in varying positions. 4,363,475, Cl. 269-69.000.

McConnell, Richard L.: *See*—
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,363,908, Cl. 528-302.000.

McCormick-Goodhart, Mark H.: *See*—
Cannella, Vincent D.; and McCormick-Goodhart, Mark H., 4,363,691, Cl. 156-350.000.

McCullough, Timothy J. Blade holder for meat trimming knife. 4,363,170, Cl. 30-276.000.

McDonald, Winford G. Product dispenser having increased coin holding capacity. 4,363,392, Cl. 194-1.00B.

McDonald, Winford G. Coin controlled mechanism for vending machine. 4,363,393, Cl. 194-63.000.

McGowan, Paul T.; and Wright, Raymond E., to Owens-Corning Fiberglas Corporation. Method and apparatus for determining the binder content in a fibrous mat. 4,363,968, Cl. 250-339.000.

McGrath, Richard F., to Minnesota Mining and Manufacturing Company. Buffing pad cleaning tool. 4,363,157, Cl. 15-388.000.

McIntyre, Ian L.: *See*—
Allan, Colin J.; and McIntyre, Ian L., 4,363,970, Cl. 250-390.000.

McMaster, Harold A. Quench roll including helically wrapped support. 4,363,163, Cl. 29-127.000.

McNamara, Albert C., Jr., to Esquire, Inc. Stacked fixtures with angularly positioned lamps and downwardly light-directing reflectors. 4,364,105, Cl. 362-224.000.

McQuay-Perfex, Inc.: *See*—
Watson, Thomas E.; and Smallwood, Paul R., Jr., 4,363,596, Cl. 415-1.000.

Mead, John: *See*—
Curtis, Michael; Garrett, Peter R.; and Mead, John, 4,363,740, Cl. 252-91.000.

Medtronic, Inc.: *See*—
Roline, Glenn; and Walmsley, Frank, 4,363,325, Cl. 128-419.0PG.

Mehta, Mehar K., to Equipment Company of America. Cylinder assembly and method of replacing seals and bearings. 4,363,261, Cl. 92-128.000.

Meiller, Francois; and Le Du, Yannick, to Rhone-Poulenc Industries. Process for water treatment by flocculation. 4,363,733, Cl. 210-727.000.

Meinert, Norbert: *See*—
Broemer, Heinz; and Meinert, Norbert, 4,363,879, Cl. 501-44.000.

Melling, Elmer M.: *See*—
Johnson, Robert M.; and Melling, Elmer M., 4,363,666, Cl. 106-90.000.

Melocik, Grant C.; and Wiblin, Wayne T., to Towmotor Corporation. Magnetic control pedal apparatus. 4,364,022, Cl. 338-32.00H.

Menault, Jacques: *See*—
Chion, Pierre; Menault, Jacques; and Rodier, Henry, 4,363,895, Cl. 525-54.210.

Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; and Traunecker, Werner, to Boehringer Ingelheim GmbH. Aminoalkyl-substituted heterocycles. 4,363,814, Cl. 424-272.000.

Mercer, John E. Automatic navigation station identifier and monitor. 4,363,933, Cl. 178-118.000.

Merck & Co., Inc.: *See*—
Bacher, Stuart; Rosas, Carlos B.; and Sharkey, John J., 4,363,751, Cl. 252-469.000.
Cottrell, Ian W.; Sandford, Paul A.; and Baird, John K., 4,363,669, Cl. 106-205.000.

Merry, Raymond: *See*—
Jones, Andrew W.; and Merry, Raymond, 4,363,458, Cl. 244-153.00R.

Mertanen, Pekka: *See*—
Aakenus, Tiina; Mertanen, Pekka; and Peltonen, Reijo, 4,363,316, Cl. 126-390.000.

Met-Pro Corporation: *See*—
Petersen, Ray R., 4,363,603, Cl. 416-244.00R.

Meyer, Burton C.: *See*—
Holahan, Edward T.; and Meyer, Burton C., 4,364,104, Cl. 362-223.000.

Meyer, Friedhelm: *See*—
Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Christ, Klaus H., 4,363,983, Cl. 310-68.00R.

Meyer, Gordon R. Anchor system. 4,363,198, Cl. 52-155.000.

Meyer, Kurt L.: *See*—
London, Wallace; and Meyer, Kurt L., 4,363,388, Cl. 190-41.00B.

Meyer, Louis C., to Mitral Medical, Inc. Prosthetic heart valve. 4,363,142, Cl. 3-1.500.

Meyers, Harry W. Method and apparatus for detecting leaks in a structure. 4,363,236, Cl. 73-40.000.

MFE Corporation: *See*—
Burke, Edward F., Jr., 4,364,000, Cl. 318-128.000.

MGI Strength/Fitness, Inc.: *See*—
Fisher, Milton W.; and Henson, Glen E., 4,363,480, Cl. 272-69.000.

Michals, Richard A.; Mozer, Frank H.; and Zum Bahlen, Ralph E., to Stenograph Corporation. Shorthand machine having electric platen advancement. 4,363,558, Cl. 400-94.000.

Miles Laboratories, Inc.: *See*—
Biddlecom, William G., 4,363,817, Cl. 424-311.000.
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,363,759, Cl. 260-112.700.
Custard, Elizabeth; Liao, John C.; and Ponzo, John L., 4,363,632, Cl. 8-506.000.
Greenquist, Alfred C., 4,363,874, Cl. 435-7.000.

Miller Foam Enterprises, Inc.: *See*—
Murray, Bruce A.; Hasler, Peter H.; and Roth, Augustin, 4,363,610, Cl. 425-89.000.

Milliken Research Corporation: *See*—
Fay, Robert C., 4,363,694, Cl. 156-435.000.

Mills, Manuel D. Apparatus for generating an electrical signal which is proportional to the tension in a bridle. 4,363,605, Cl. 417-44.000.

Milum, Jimmy L.: *See*—
Elbrader, Clifford B.; and Milum, Jimmy L., 4,363,643, Cl. 55-499.000.

Minami, Koichi, to Tomy Kogyo Company, Inc. Competitive water filled game. 4,363,483, Cl. 273-85.00C.

Minasov, Alexandr N.: *See*—
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.

Mine, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Superconductive electromagnet apparatus. 4,363,773, Cl. 376-142.000.
Mink, George. Material handling device. 4,363,395, Cl. 198-486.000.
Minnesota Mining and Manufacturing Company: *See*—
Boon, John R.; and Wagner, Gregory J., 4,363,873, Cl. 430-546.000.
Giorgini, Norman L., 4,363,862, Cl. 430-98.000.
McGrath, Richard F., 4,363,157, Cl. 15-388.000.
Nelson, Paul N., 4,363,842, Cl. 428-36.000.
Rutledge, Robert L., 4,363,864, Cl. 430-202.000.
Minor, Timothy R., to Rockwell International Corporation. Subinterval sampler. 4,363,976, Cl. 307-353.000.
Mishina, Noritoshi; Hirota, Yutaka; and Nakamura, Satoshi, to Mitsui Petrochemical Industries, Ltd. Metal-deposited paper and method for production thereof. 4,363,851, Cl. 428-333.000.
Miskel, John J., Jr.: *See*—
Lipowski, Stanley A.; and Miskel, John J., Jr., 4,363,886, Cl. 523-336.000.
Mitral Medical, Inc.: *See*—
Meyer, Louis C., 4,363,142, Cl. 3-1.500.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Itoh, Teturoh, 4,363,948, Cl. 219-69.00W.
Okada, Kazuo; and Kondo, Mitsushige, 4,363,961, Cl. 250-201.000.
Ozaki, Minoru; and Onishi, Ken, 4,364,096, Cl. 360-13.000.
Yoshizaki, Kiyoshi, 4,363,675, Cl. 148-11.50P.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Wakita, Saburo; and Sakonooka, Akihiko, 4,363,660, Cl. 75-128.00B.
Mitsuchi Corporation: *See*—
Okada, Hiroshi, 4,363,164, Cl. 29-270.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Mishina, Noritoshi; Hirota, Yutaka; and Nakamura, Satoshi, 4,363,851, Cl. 428-333.000.
Mix, Renard E., to General Motors Corporation. Laminated metal-plastic battery grid. 4,363,857, Cl. 429-234.000.
Miyaoka, Senri: *See*—
Isono, Katsuo; Miyaoka, Senri; and Shinkai, Kinya, 4,364,083, Cl. 358-69.000.
Miyashita, Kiyoshi, to Olympus Optical Company, Ltd. Extra sheet feeder for copying machine. 4,363,477, Cl. 271-9.000.
Mizoguchi, Akira: *See*—
Yamamori, Kiyoshi; Hiromori, Yasutaka; and Mizoguchi, Akira, 4,364,065, Cl. 346-140.00R.
Mizusaki, Yoshinobu, to Nissin Kogyo Co., Ltd. Liquid-level indicating window. 4,363,240, Cl. 73-334.000.
Mizushima, Masashi; Maruyama, Masanori; Ehata, Shigeru; and Fukushima, Masakazu, to Hitachi, Ltd. Vidicon type camera tube. 4,363,996, Cl. 313-449.000.
Mobil Oil Corporation: *See*—
Murray, James G., 4,363,771, Cl. 264-119.000.
Pelrine, Bruce P.; Chen, Nai Y.; and Yan, Tsoung Y., 4,363,717, Cl. 208-108.000.
Modica, Frank S.: *See*—
Hirschberg, Eugene H.; Bertolacini, Ralph J.; and Modica, Frank S., 4,363,720, Cl. 208-120.000.
Moeller, Alexander; and Scherowsky, Guenther, to Siemens Aktiengesellschaft. Liquid crystals having pleochroic dyes. 4,363,743, Cl. 252-299.100.
Mohar, Louis. Tissue roll storage and dispenser apparatus. 4,363,454, Cl. 242-55.530.
Mohler, Hanns: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Molins Limited: *See*—
Preston, Edward G.; and Rakowicz, Jan A., 4,363,332, Cl. 131-282.000.
Monroe, William E. Dock-side boat cover. 4,363,284, Cl. 114-361.000.
Montedison S.p.A.: *See*—
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, 4,363,906, Cl. 528-248.000.
Moon, William T., Jr., to Robertshaw Controls Company. Plunger seal assembly and method of making the same. 4,363,463, Cl. 251-61.000.
Moore, Alan R.; and Waterworth, John, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Radar transponders. 4,364,049, Cl. 343-6.00R.
Mooser, Oswaldo: *See*—
Willi, Albert; Maute, Willy; and Mooser, Oswaldo, 4,363,824, Cl. 426-589.000.
Morgan, Cleon C., to Donnelly Mirrors, Inc. Hinged window assembly. 4,363,191, Cl. 49-381.000.
Morimoto, Ichiro: *See*—
Enomoto, Fujio; and Morimoto, Ichiro, 4,363,546, Cl. 354-195.000.
Morin, Andre, to Perini Corporation. Pipe section positioning apparatus. 4,363,594, Cl. 414-747.000.
Morishige, Ryuma: *See*—
Kondo, Tokio; and Morishige, Ryuma, 4,363,149, Cl. 14-16.100.
Morita, Kiyoshi: *See*—
Morita, Takeshi; and Morita, Kiyoshi, 4,363,725, Cl. 209-257.000.
Morita, Takeshi; and Morita, Kiyoshi, to Kabushiki Kaisha Morita Kouken. Apparatus for removing gravel from excavated soil. 4,363,725, Cl. 209-257.000.
Morrill, Charles D., to Smith International, Inc. Extreme temperature, high pressure balanced, rising stem gate valve with super preloaded, stacked, solid lubricated, metal-to-metal seal. 4,363,465, Cl. 251-214.000.
Morris, Keith W.: *See*—
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., 4,363,698, Cl. 162-30.100.
Morton, Arthur W., to Conoco Inc. Flow line bundle and method of towing same. 4,363,566, Cl. 405-169.000.
Moskvin, Mikhail A.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.
Motor Jihlava narodni podnik: *See*—
Mateja, Ludvik; and Prasek, Josef, 4,363,950, Cl. 219-69.00R.
Mouri, Yasunori: *See*—
Amano, Matsuo; Mouri, Yasunori; Abe, Osamu; Suda, Seiji; and Sasayama, Takao, 4,363,307, Cl. 123-492.000.
Mozer, Frank H.: *See*—
Michals, Richard A.; Mozer, Frank H.; and Zum Bahlen, Ralph E., 4,363,558, Cl. 400-94.000.
Mueller, Franz-Josef: *See*—
Acker, Rolf-Dieter; Hamprecht, Gerhard; and Mueller, Franz-Josef, 4,363,925, Cl. 556-415.000.
Mueller, Herbert; and Huchler, Otto H., to BASF Aktiengesellschaft. Depolymerization of polytetramethylene glycol ethers. 4,363,924, Cl. 549-509.000.
Mueller, Otto, Jr.: *See*—
Richardson, Leonard H.; Mueller, Otto, Jr.; and Elfes, Lee E., 4,363,384, Cl. 188-72.700.
Muhlbach, Anton, to USM Corporation. Shoe sole attaching press. 4,363,148, Cl. 12-33.000.
Mulcahy, Harry W., to AMSTED Industries Incorporated. Resilient railway truck bearing adaptor. 4,363,278, Cl. 105-218.00R.
Mulders, Jan A., to Borg-Warner Corporation. Thrust bearing arrangement. 4,363,608, Cl. 417-424.000.
Muller, Jacques: *See*—
Schaffner, Jean-Claude; and Muller, Jacques, 4,363,554, Cl. 368-190.000.
Muller, Peter: *See*—
Scheidweiler, Andreas; and Muller, Peter, 4,364,031, Cl. 340-629.000.
Munoz, Bernard; and Tavenne, Eric, to Societe d'Etudes de Machines Thermiques S.E.M.T. Piston for a reciprocating piston machine, particularly an internal combustion engine. 4,363,293, Cl. 123-41.380.
Murakami, Norio: *See*—
Tsuda, Toshitaka; Murano, Kazuo; Yamaguchi, Kazuo; Chujo, Takafumi; Murakami, Norio; and Takahashi, Motohide, 4,363,977, Cl. 307-358.000.
Murano, Kanji: *See*—
Nishigaki, Susumu; Murano, Kanji; and Watanabe, Yoshihisa, 4,363,993, Cl. 310-332.000.
Murano, Kazuo: *See*—
Tsuda, Toshitaka; Murano, Kazuo; Yamaguchi, Kazuo; Chujo, Takafumi; Murakami, Norio; and Takahashi, Motohide, 4,363,977, Cl. 307-358.000.
Murata, Atsuhiko: *See*—
Akashiba, Takeo; Nakayama, Akira; and Murata, Atsuhiko, 4,363,875, Cl. 435-108.000.
Murata Kikai Kabushiki Kaisha: *See*—
Fukunaga, Mitsuo, 4,363,207, Cl. 57-58.860.
Murooka, Rikichi, to Sony/Tektronix. Calibration apparatus for analog-to-digital converter. 4,364,027, Cl. 340-347.0CC.
Murray, Bruce A.; Hasler, Peter H.; and Roth, Augustin, to Miller Foam Enterprises, Inc. Apparatus for continuously molding cylindrical blocks of foamed polymeric material. 4,363,610, Cl. 425-89.000.
Murray, James G., to Mobil Oil Corporation. Process for preparing non-oriented polyolefin film. 4,363,771, Cl. 264-119.000.
Muschalek, Ben E. Pickup truck spare tire rack. 4,363,431, Cl. 224-42.230.
Naftulin, Henry. Apparatus for collecting fluids. 4,363,340, Cl. 141-51.000.
Nagakubo, Yoshihide; and Iizuka, Hisakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Short circuit prevention in the manufacture of semiconductor devices. 4,363,696, Cl. 156-653.000.
Nagao, Nobuya: *See*—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,364,091, Cl. 358-148.000.
Nagayama, Haruhiko, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,364,059, Cl. 346-75.000.
Nagayasu, Koichi: *See*—
Shibue, Toshiaki; Nagayasu, Koichi; Kobayashi, Tohru; and Tokitou, Kouji, 4,363,871, Cl. 430-523.000.
Nagy, Egon, to CHEMIMAS Vegyigep Tervezo es Fovallalkozo Vallalat. Centrifugal crusher with a rotating grate having grate bars adapting the grate for separating the grit also according to its width. 4,363,452, Cl. 241-91.000.
Nagyvary, Joseph J., to Texas A&M University System, The. Method for treating hyperbilirubinemia. 4,363,801, Cl. 424-180.000.
Naito, Hiroyasu, to Honda Giken Kogyo Kabushiki Kaisha. Ignition timing control device for internal combustion engine. 4,363,297, Cl. 123-146.50A.
Naitoh, Katsuyuki: *See*—
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.

Nakagawa, Shuichi: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, 4,364,056, Cl. 346-29.000.
Nakagawa, Toyoaki: *See*—
Sone, Kohki; Okamura, Kenji; and Nakagawa, Toyoaki, 4,363,306, Cl. 123-440.000.
Nakajima, Yoshio: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,363,541, Cl. 354-23.00D.
Nakajima, Yuji; and Izumitani, Tetsuro, to Hoya Corporation. Coated phosphate glass. 4,363,852, Cl. 428-432.000.
Nakajima, Yukio: *See*—
Kondo, Isao; and Nakajima, Yukio, 4,363,542, Cl. 354-31.000.
Nakamura, Akinori: *See*—
Nanjo, Toshio; Nakamura, Akinori; and Ishikawa, Hidekazu, 4,363,473, Cl. 266-187.000.
Nakamura, Joji; and Akanuma, Shigetake, to Kabushiki Kaisha Komatsu Seisakusho. Method and apparatus for fracturing rock beds. 4,363,518, Cl. 299-14.000.
Nakamura, Kazuharu; Nakanishi, Yutaka; and Yamada, Toshihiko, to Toyotomi Kogyo Co., Ltd. Fire extinguishing device for oil burner. 4,363,620, Cl. 431-33.000.
Nakamura, Kazuharu; Matsumoto, Motoki; and Kondo, Akinobu, to Toyotomi Kogyo Co., Ltd. Oil burner of type of pumping up fuel oil. 4,363,621, Cl. 431-90.000.
Nakamura, Motoharu: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, 4,363,677, Cl. 148-111.000.
Nakamura, Nobuyuki: *See*—
Shirahata, Isao; Kitamura, Nobu; Nakamura, Nobuyuki; and Hori, Hisako, 4,363,899, Cl. 525-437.000.
Nakamura, Norio: *See*—
Sakato, Naoyuki; and Nakamura, Norio, 4,363,836, Cl. 427-393.600.
Nakamura, Satoshi: *See*—
Mishina, Noritoshi; Hirota, Yutaka; and Nakamura, Satoshi, 4,363,851, Cl. 428-333.000.
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Toner transfer development using alternating electric field. 4,363,861, Cl. 430-97.000.
Nakanishi, Yutaka: *See*—
Nakamura, Kazuharu; Nakanishi, Yutaka; and Yamada, Toshihiko, 4,363,620, Cl. 431-33.000.
Nakano, Jun: *See*—
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.
Nakashima, Syozi: *See*—
Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, 4,363,794, Cl. 424-52.000.
Nakatani, Genji: *See*—
Iizuka, Motohiko; Nakatani, Genji; and Kishimoto, Sumiyuki, 4,363,655, Cl. 75-41.000.
Nakayama, Akira: *See*—
Akashiba, Takeo; Nakayama, Akira; and Murata, Atsuhiko, 4,363,875, Cl. 435-108.000.
Nakayama, Shunsuke: *See*—
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,363,889, Cl. 523-513.000.
Nalco Chemical Company: *See*—
Goretta, Louis A.; and Sibert, Frederick J., 4,363,752, Cl. 252-475.000.
Slovinsky, Manuel, 4,363,734, Cl. 210-750.000.
Nanjo, Toshio; Nakamura, Akinori; and Ishikawa, Hidekazu, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for reducing iron ore or the like. 4,363,473, Cl. 266-187.000.
Narato, Kiyoshi; Ohtsuka, Keizou; and Niwa, Sadahiko, to Hitachi, Ltd. Method and apparatus for diagnosing local overheating in a rotary electric machine. 4,364,032, Cl. 340-679.000.
Nashua Corporation: *See*—
Veillette, Norman T.; and Pian, Charles H. C., 4,363,863, Cl. 430-115.000.
Nassau Recycle Corporation: *See*—
Carr, Susan H.; Schobert, Monique A.; and Taylor, John J., 4,363,449, Cl. 241-21.000.
Nasu, Sataro; Hara, Hikoyoshi; and Iwanaga, Kouichi, to Matsushita Electric Works, Ltd. Electric shaver. 4,363,169, Cl. 30-41.000.
National Gypsum Company: *See*—
Johnson, Robert M.; and Melling, Elmer M., 4,363,666, Cl. 106-90.000.
National Research Development Corporation: *See*—
Glasser, Fredrik P.; and Gunawardane, Richard P., 4,363,650, Cl. 71-36.000.
Nederlandsch Organisatie voor Toegepast-Natuurvetenschappelijk Onderzoek Ten Behoeve van Nyserheid, Handel en Verkeer: *See*—
van Turnhout, Jan; and Ahuja, Ramesh C., 4,363,860, Cl. 430-83.000.
Nelson, Calvin G., to Magnetic Controls Company. Patch module. 4,363,941, Cl. 200-1.00R.
Nelson, Hugh W.; Prohazka, George J.; and Morris, Keith W., to Combustion Engineering, Inc. Method for drying and burning viscous aqueous liquors which contain organics. 4,363,698, Cl. 162-30.100.
Nelson, Paul N., to Minnesota Mining and Manufacturing Company. Elastomeric pre-stretched tubes for providing electrical stress control. 4,363,842, Cl. 428-36.000.
Nemoto, Takayuki; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Remote releasable camera. 4,363,544, Cl. 354-60.00R.
Neumann, Otto W., to AMSTED Industries Incorporated. Railroad car truck side frame - bolster connection. 4,363,276, Cl. 105-197.00R.
New York University: *See*—
Rugg, Barry A.; and Stanton, Robert, 4,363,671, Cl. 127-1.000.
Nickson Industries, Inc.: *See*—
Evans, Ralph K.; and Florian, Roy S., 4,363,436, Cl. 228-144.000.
Niemi, Bill H.: *See*—
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,363,609, Cl. 417-477.000.
Nightingale, James P. Combustion chamber pressure tap. 4,363,296, Cl. 123-59.0BM.
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M. Impact tool with damping chambers. 4,363,365, Cl. 173-139.000.
Nilsson, Emanuel, to AB Welin. Ship's embarkation device. 4,363,150, Cl. 14-69.500.
Nippon Electric Co., Ltd.: *See*—
Makabe, Takayoshi; and Kuraishi, Yoshiaki, 4,364,006, Cl. 323-353.000.
Yamashita, Koji, 4,364,051, Cl. 343-715.000.
Nippon Hoso Kyokai: *See*—
Ando, Fumihiko, 4,363,963, Cl. 250-211.00J.
Nippon Kokan Kabushiki Kaisha: *See*—
Iizuka, Motohiko; Nakatani, Genji; and Kishimoto, Sumiyuki, 4,363,655, Cl. 75-41.000.
Nippon Piston Ring Co., Ltd.: *See*—
Takahashi, Kentaro; Hiraoka, Takeshi; and Urano, Shigeru, 4,363,662, Cl. 75-243.000.
Nippon Shinyaku Co. Ltd.: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.
Nippon Soken, Inc.: *See*—
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,363,210, Cl. 60-276.000.
Kobayashi, Akihiro; Kida, Masashi; and Kato, Yoji, 4,363,958, Cl. 219-505.000.
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,363,644, Cl. 55-523.000.
Nippon Steel Corporation: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, 4,363,677, Cl. 148-111.000.
Nishigaki, Susumu; Murano, Kanji; and Watanabe, Yoshihisa, to Sony Corporation. Piezoelectric electro-mechanical bimorph transducer. 4,363,993, Cl. 310-332.000.
Nishimura, Naozumi; Matsunaga, Akira; and Ishii, Yasuo, to Tohoku Metal Industries. Explosives having powdered ferrite magnet as a tracer dispersed therethrough and a method for producing the same. 4,363,678, Cl. 149-6.000.
Nishimura, Tomoaki: *See*—
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.
Nishimura, Yuusaku: *See*—
Koseki, Yasuo; Yamada, Akira; Nishimura, Yuusaku; and Takahashi, Sankichi, 4,363,219, Cl. 62-101.000.
Nishino, Hideki: *See*—
Onodera, Toru; Ohsawa, Akira; Nishino, Hideki; and Watari, Masao, 4,364,112, Cl. 364-200.000.
Nishio, Hirochika: *See*—
Watanabe, Yutaka; and Nishio, Hirochika, 4,363,839, Cl. 428-31.000.
Nishiwaki, Koji: *See*—
Katsuta, Teiji; Nishiwaki, Koji; and Katagiri, Shinjiro, 4,363,953, Cl. 219-121.0EK.
Nishiyama, Yoshihisa: *See*—
Fujii, Kunihiko; and Nishiyama, Yoshihisa, 4,363,693, Cl. 156-360.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction type semiconductor device with multiple doped layers for potential modification. 4,364,072, Cl. 357-22.000.
Nissan Motor Co., Ltd.: *See*—
Sone, Kohki; Okamura, Kenji; and Nakagawa, Toyoaki, 4,363,306, Cl. 123-440.000.
Nissin Kogyo Co., Ltd.: *See*—
Mizusaki, Yoshinobu, 4,363,240, Cl. 73-334.000.
Nitto Boseki Co., Ltd.: *See*—
Yamamoto, Osamu; Takehara, Keishin; and Yasiro, Yutaka, 4,363,878, Cl. 501-36.000.
Niwa, Sadahiko: *See*—
Narato, Kiyoshi; Ohtsuka, Keizou; and Niwa, Sadahiko, 4,364,032, Cl. 340-679.000.
Nixdorf Computer AG: *See*—
Baitz, Guenter, 4,363,229, Cl. 70-279.000.

Nizova, Svetlana A.: *See*—
Rozovsky, Alexandr Y.; Stytsenko, Valentin D.; Nizova, Svetlana A.; Belov, Petr S.; and Dyakonov, Alexandr J., 4,363,750, Cl. 252-459.000.

NJM, Inc.: *See*—
White, Rollin T., 4,363,685, Cl. 156-212.000.

Noe, Stephen L., to Caterpillar Tractor Co. Cutting torch height control apparatus. 4,363,468, Cl. 266-76.000.

Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, to Koa Oil Company, Limited. Continuous process for industrially producing mesocarbon microbeads. 4,363,670, Cl. 106-278.000.

Noling, Richard: *See*—
Mackall, Kenneth, Jr.; and Noling, Richard, 4,363,591, Cl. 414-563.000.

Nomaguchi, Hirotsugu: *See*—
Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, 4,363,829, Cl. 427-53.100.

Northern Telecom Limited: *See*—
Dasboul, Fouad; Le Van, Tiu; and Fung, Kit-Chung, 4,363,938, Cl. 179-170.200.

Northrop Corporation: *See*—
Spiegel, Leo, 4,364,045, Cl. 340-870.310.

Nossek, Josef, to Siemens Aktiengesellschaft. Switched-capacitor filter circuit having at least one simulated inductor. 4,364,116, Cl. 364-825.000.

Novatome: *See*—
Cornu, Bernard; and Pierrey, Jean-Louis, 4,363,777, Cl. 376-203.000.

Nowack, Horst: *See*—
Sengebusch, Peter; and Nowack, Horst, 4,364,113, Cl. 364-507.000.

Nowak, Manfred: *See*—
Viertel, Lothar; Kaiser, Klaus-Peter; and Nowak, Manfred, 4,363,511, Cl. 296-97.00K.

Nussbaum, Otto J., to Halstead Industries, Inc. Heat pump using solar and outdoor air heat sources. 4,363,218, Cl. 62-79.000.

Oberhoffner, Gerhard; Koninger, Horst; and Kastl, Alfons, to Agfa-Gevaert AG. Arrangement for introducing band light-sensitive material into developing device and the developing device provided therewith. 4,363,548, Cl. 354-298.000.

O'Brien, Michael; Smith, Nelson E., Jr.; and Prussia, Stanley E., to University of California, The Regents of The. Weighing and grading samples in order to grade large batches of fruit. 4,363,408, Cl. 209-546.000.

Occidental Chemical Corp.: *See*—
Adams, Allen S.; and Caesar, Michael B., 4,363,786, Cl. 422-189.000.

Oce-van der Grinten N.V.: *See*—
Vercoulen, Johannes C. A., 4,363,858, Cl. 430-56.000.

Ocheltree, William A.: *See*—
Bonniwell, Joel C.; and Ocheltree, William A., 4,363,521, Cl. 301-63.00R.

Ochiai, Yoshihito; Nakashima, Syozi; and Hayashi, Midori, to Lion Corporation. Oral composition for caries prophylaxis. 4,363,794, Cl. 424-52.000.

Ochmann, Rudolf, to U.S. Philips Corporation. Method of and apparatus for controlling the electric power applied to a rotary-anode X-ray tube. 4,363,971, Cl. 378-110.000.

Odawara, Osamu, to Director-General of the Agency of Industrial Science & Technology. Method for providing ceramic lining to a hollow body by thermit reaction. 4,363,832, Cl. 427-183.000.

O'Donnell, John T., III. Transplantable planter. 4,363,189, Cl. 47-73.000.

Ogasawara, Hiroomi; and Ogasawara, Masaomi. Rotation angle detecting device. 4,364,046, Cl. 340-870.370.

Ogasawara, Masaomi: *See*—
Ogasawara, Hiroomi; and Ogasawara, Masaomi, 4,364,046, Cl. 340-870.370.

Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic seat belt device. 4,363,500, Cl. 280-802.000.

Ogawa, Kazuaki: *See*—
Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, 4,363,649, Cl. 65-158.000.

Ogawa, Yoshihiro: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, 4,364,056, Cl. 346-29.000.

Oger, Rene, to C. Delachaux. Electrical supply line for the supply or current to railway vehicles. 4,363,939, Cl. 191-43.000.

Ogihara, Yutaka: *See*—
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,364,091, Cl. 358-148.000.

Ogiwara, Osao, to Akebono Brake Industry Company, Ltd. Friction material. 4,363,884, Cl. 523-156.000.

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Ohkawara Mfg. Co., Ltd.: *See*—
Yoshida, Kazuyuki; Kaneko, Shizuo; Okawara, Mikio; and Hiroki, Terushige, 4,363,285, Cl. 118-19.000.

Ohm, Edward A., to Bell Telephone Laboratories, Incorporated. Antenna arrangements for suppressing selected sidelobes. 4,364,052, Cl. 343-781.00P.

Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Brake booster. 4,363,259, Cl. 91-422.000.

Ohnishi, Takeo: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.

Ohoka, Akihiro: *See*—
Ishiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, 4,364,023, Cl. 340-146.30H.

Ohsawa, Akira: *See*—
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Ohshita, Hiroshi; and Tsutsumi, Tadao, to Toray Industries, Inc. Process for producing flame retardant polyamide molding resin containing melamine cyanurate. 4,363,890, Cl. 524-101.000.

Ohtsuka, Keizou: *See*—
Narato, Kiyoshi; Ohtsuka, Keizou; and Niwa, Sadahiko, 4,364,032, Cl. 340-679.000.

Ohude, Masao; and Kawamura, Duro, to Shibuya Kogyo Co., Ltd. Apparatus for simultaneous operation of uncasing and cap removing. 4,363,204, Cl. 53-381.00A.

Oji Paper Co., Ltd.: *See*—
Wada, Isao; Kido, Jun-ichiro; and Koido, Kazuo, 4,363,700, Cl. 162-72.000.

Ojima, Nobutoshi: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi, Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Okada, Hachiro: *See*—
Onishi, Keizo; Adachi, Takao; Fuji, Akiyoshi; Chiba, Ryuichi; Naitoh, Katsuyuki; and Okada, Hachiro, 4,363,952, Cl. 219-76.120.

Okada, Hideo: *See*—
Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, 4,363,649, Cl. 65-158.000.

Okada, Hiroshi, to Mitsuchi Corporation. Device for removing dump nut from bolt. 4,363,164, Cl. 29-270.000.

Okada, Junichi: *See*—
Koto, Haruhiko; and Okada, Junichi, 4,364,067, Cl. 346-140.00R.

Okada, Kazuo; and Kondo, Mitsushige, to Mitsubishi Denki Kabushiki Kaisha. Automatic focusing apparatus. 4,363,961, Cl. 250-201.000.

Okado, Chihiro; and Ugai, Isami, to Tokyo Shibaura Denki Kabushiki Kaisha. Control device of inverters. 4,364,109, Cl. 363-41.000.

Okamura, Kenji: *See*—
Sone, Kohki; Okamura, Kenji; and Nakagawa, Toyoaki, 4,363,306, Cl. 123-440.000.

Okamura, Tatsuro; and Irifune, Hideki, to Okamura, Tatsuro; and Yoshida Kogyo K.K. Aluminum hydroxide-based spray-on insulating material for building and method for the preparation thereof. 4,363,739, Cl. 252-62.000.

Okawara, Mikio: *See*—
Yoshida, Kazuyuki; Kaneko, Shizuo; Okawara, Mikio; and Hiroki, Terushige, 4,363,285, Cl. 118-19.000.

Okuda, Masanao: *See*—
Torii, Michihiro; Okuda, Masanao; and Suzuki, Yuzuru, 4,363,984, Cl. 310-156.000.

Olashaw, William F.; Postlethwait, James H.; and Winterstein, Jeffrey L., to General Electric Company. Switchboard cubicle door hinge and latch arrangement. 4,363,528, Cl. 312-292.000.

Olin Corporation: *See*—
Pryor, Michael J.; and Tyler, Derek E., 4,363,352, Cl. 164-418.000.

Olympus Optical Company Ltd.: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,363,541, Cl. 354-23.00D.
Enomoto, Fujio; and Morimoto, Ichiro, 4,363,546, Cl. 354-195.000.
Hashimoto, Akira; and Shirai, Hitoshi, 4,363,547, Cl. 354-212.000.
Kondo, Isao; and Nakajima, Yukio, 4,363,542, Cl. 354-31.000.
Miyashita, Kiyoshi, 4,363,477, Cl. 271-9.000.

Ong, Poen S. Light switched segmented tomography detector. 4,363,969, Cl. 250-367.000.

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Onishi, Ken: *See*—
Ozaki, Minoru; and Onishi, Ken, 4,364,096, Cl. 360-13.000.

Onishi, Kenji: *See*—
Aizawa, Tsuneo; and Onishi, Kenji, 4,363,254, Cl. 83-800.000.

Ono, Toru: *See*—
Uchino, Noriyuki; and Ono, Toru, 4,363,755, Cl. 252-545.000.

Onodera, Toru; Ohsawa, Akira; Nishino, Hideki; and Watari, Masao, to Hitachi, Ltd. Miniature computer with separate hand-held controller. 4,364,112, Cl. 364-200.000.

Oosaka, Shigenori: *See*—
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Oozeki, Takashi: *See*—
Anno, Gousuke; and Oozeki, Takashi, 4,364,063, Cl. 346-76.0PH.

Optische Werke G. Rodenstock: *See*—
Wieczorek, Hanne-Lore; Triller, Adolf; and Gassenhuber, Helmut, 4,364,107, Cl. 362-285.000.

Orshansky Transmission Corporation: *See*—
Weseloh, William E., 4,363,247, Cl. 74-687.000.

Ortho Pharmaceutical Corporation: *See*—
Kung, Patrick C.; and Goldstein, Gideon, 4,363,799, Cl. 424-85.000.

Ortlieb, Wolfgang: *See*—
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Osaka, Yoshiaki: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; and Tsuchiya, Tadashi, 4,363,813, Cl. 424-270.000.
Otis Elevator Company: *See*—
Bittar, Joseph, 4,363,381, Cl. 187-29.00R.
Otis Engineering Corporation: *See*—
Taylor, Donald F.; and Boyle, William G., 4,363,359, Cl. 166-214.000.
Outboard Marine Corporation: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,363,629, Cl. 440-61.000.
Kuhn, John B., 4,363,298, Cl. 123-179.00S.
Owens-Corning Fiberglas Corporation: *See*—
Eisenberg, Arnold J., 4,363,645, Cl. 65-2.000.
McGowan, Paul T.; and Wright, Raymond E., 4,363,968, Cl. 250-339.000.
OY Nokia AB: *See*—
Leskinen, Seppo J., 4,363,601, Cl. 416-188.000.
Oy Wartsila AB: *See*—
Aakenus, Tiina; Mertanen, Pekka; and Peltonen, Reijo, 4,363,316, Cl. 126-390.000.
Ozaki, Minoru; and Onishi, Ken, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for reproducing PCM magnetic recording tape. 4,364,096, Cl. 360-13.000.
Pacific Gas and Electric Company: *See*—
Sharp, Spencer G., 4,363,215, Cl. 60-641.200.
Pacific Scientific Company: *See*—
Larsen, Richard R., 4,363,423, Cl. 221-82.000.
Paddon, Christopher M.; and Wetzel, Donald C., to Health Care Innovations, Inc. Medical patient weighing scale. 4,363,368, Cl. 177-144.000.
Paetsch, Karl, to International Business Machines Corporation. Signature presentation method and apparatus. 4,364,024, Cl. 340-146.3SY.
Paisley, Gary V.; Altschuler, J. George; and Rommler, Josef, to Coca-Cola Company, The. Foamed thermoplastic resin cork having a natural cork-like appearance and a method of injection molding the cork. 4,363,849, Cl. 428-318.800.
Paleologos, George E. Combined body and power generating system. 4,363,213, Cl. 60-505.000.
Palovcik, John, to Rockwell International Corporation. Spindle for heavy duty truck or trailer axle. 4,363,522, Cl. 301-131.000.
Panzer, George W.; and Boyer, William, to Alcolac, Inc. Use of C_8-34 alpha olefin sulfonates to improve and enhance the flotation and collection process used for barite. 4,363,724, Cl. 209-166.000.
Papaluca, Vincent: *See*—
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Papantoniou, Christos: *See*—
Jacquet, Bernard; Papantoniou, Christos; Land, Gerard; and Forestier, Serge, 4,363,797, Cl. 424-70.000.
Parker, John J.: *See*—
Crates, Fred J.; Fouss, James L.; and Parker, John J., 4,363,732, Cl. 210-532.200.
Patel, Natu R., to Gulf Oil Corporation. Benzylsulfonyl diethylcarbamyl triazole and use as a selective herbicide. 4,363,915, Cl. 548-265.000.
Patel, Ramesh P.; and Bonnell, Alfred, Jr., to Kidde, Inc. Crane counterweight and handling method. 4,363,412, Cl. 212-196.000.
Patel, Vishnubhai V.: *See*—
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Paton, Samuel J.: *See*—
Crum, Glen F.; and Paton, Samuel J., 4,363,748, Cl. 252-437.000.
Peace, Edward R. Electrostatic precipitator insulator construction. 4,363,932, Cl. 174-138.00R.
Pease, James F. Fluid control valve and inlet fitting assembly. 4,363,337, Cl. 137-343.000.
Pease, James F. Sheet metal threaded article. 4,363,581, Cl. 411-82.000.
Pedrazzi, Reinhard, to Sandoz Ltd. Monoazo dyes containing at least one sulfo group and at least two basic or cationic groups. 4,363,761, Cl. 260-153.000.
Peerless Electronics Research Corp.: *See*—
Schmid, Carl J., 4,363,245, Cl. 73-864.220.
Peitz, Josef, Sr. Overrunning drum having an amplifying device. 4,363,386, Cl. 188-331.000.
Pelrine, Bruce P.; Chen, Nai Y.; and Yan, Tsoung Y., to Mobil Oil Corporation. Conversion of heavy hydrocarbon oils. 4,363,717, Cl. 208-108.000.
Peltonen, Reijo: *See*—
Aakenus, Tiina; Mertanen, Pekka; and Peltonen, Reijo, 4,363,316, Cl. 126-390.000.
Pennsylvania Sewing Research Corp.: *See*—
Lindquist, Carl, 4,363,280, Cl. 112-105.000.
Penz, Perry A., to Texas Instruments Incorporated. Stacked electro-optic display. 4,364,039, Cl. 340-784.000.
Pepe, Richard J., to Goodyear Tire & Rubber Company, The. Pneumatic tire including gas absorbing cords. 4,363,346, Cl. 152-356.00R.
Perini Corporation: *See*—
Morin, Andre, 4,363,594, Cl. 414-747.000.
Perrot-France: *See*—
Dejoie, Paul; and Lamarque, Bernard, 4,363,444, Cl. 239-177.000.
Petersen, Christian C., to Polaroid Corporation. Linear motor. 4,363,980, Cl. 310-15.000.
Petersen, Gene R.: *See*—
United States of America, National Aeronautics and Space Administration; Dastoor, Minoo N.; Schubert, Wayne W.; and Petersen, Gene R., 4,363,188, Cl. 47-58.000.
Petersen, Ray R., to Met-Pro Corporation. Pump impeller assembly with anti-rotation device. 4,363,603, Cl. 416-244.00R.
Peterson, Donald J., to Procter & Gamble Company, The. Polyol esters of alpha-hydroxy carboxylic acids. 4,363,763, Cl. 260-410.700.
Pettibone Corporation: *See*—
Stone, Milton, 4,363,742, Cl. 252-182.100.
Pfau, Jean; and Bonga, Benno I., to Ateliers des Charmilles S.A. Travelling wire EDM apparatus. 4,363,949, Cl. 219-69.00W.
Pfizer Inc.: *See*—
Cross, Peter E.; and Dickinson, Roger P., 4,363,912, Cl. 546-273.000.
Hauske, James R., 4,363,803, Cl. 424-180.000.
Shoemaker, Richard G., 4,363,421, Cl. 220-319.000.
Philips, Gary, to Airway Industries, Inc. Molded shells for luggage and the like. 4,363,770, Cl. 264-87.000.
Phillips Petroleum Company: *See*—
Capshew, Charles E., 4,363,746, Cl. 252-429.00B.
Phipps, Gregory F., to Baldwin, Mary A.; Favaro, Bernard J.; and Roberts, Sandra. Electronic gate control. 4,364,003, Cl. 318-467.000.
Pian, Charles H. C.: *See*—
Veillette, Norman T.; and Pian, Charles H. C., 4,363,863, Cl. 430-115.000.
Pieri, Lorenzo: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Pierrey, Jean-Louis: *See*—
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Schmidt, Manfred; Hoyer, Gerd; Leiberich, Hermann; and Pietschmann, Helmut, 4,363,626, Cl. 433-85.000.
Pinckley, Marion E.; and Carlin, William G. Apparatus for storage and dispensing coffee. 4,363,262, Cl. 99-290.000.
Piqua Engineering, Inc.: *See*—
Greer, Charles H., 4,363,267, Cl. 100-255.000.
Pischinger, Franz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Feed control by means of a flat slide valve. 4,363,302, Cl. 123-337.000.
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Plasse, Paul A.: *See*—
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Salvadori, Lawrence A., 4,363,406, Cl. 206-604.000.
Pletka, Hans-Dieter: *See*—
Bozon, Alfred; Koberstein, Edgar; Pletka, Hans-Dieter; and Voelker, Herbert, 4,363,753, Cl. 252-477.00R.
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Poff, Ronald I., to Eaton Corporation. Strain gage measurement circuit for high temperature applications using dual constant current supplies. 4,363,243, Cl. 73-766.000.
Pohl, Herbert: *See*—
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Poirier, Earl J. Method of preventing unintentional actuation of a light switch. 4,363,944, Cl. 200-42.00R.
Poirier, Victor L.; Buczak, Stanley D.; Lynch, Robert F.; and Salvo, Thomas R., to Thermo Electron Corp. Inhalation exerciser. 4,363,328, Cl. 128-728.000.
Polaroid Corporation: *See*—
Buckler, Sheldon A.; Burns, Jeffrey B.; Kniazzeh, Alfredo G.; Plasse, Paul A.; and Sullivan, David J., 4,363,407, Cl. 209-3.300.
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Polc, Petar: *See*—
Gerecke, Max; Haefely, Willy; Hunkeler, Walter; Kyburz, Emilio; Mohler, Hanns; Pieri, Lorenzo; and Polc, Petar, 4,363,762, Cl. 260-239.30T.
Pollak, I. Scott. Hammer. 4,363,344, Cl. 145-29.00R.
Polychrome Corporation: *See*—
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Pommerening, Uwe A.: *See*—
Christain, Ronald W.; Pommerening, Uwe A.; Russell, Stanley L.; Slingsby, Barry; and West, Julian W., 4,363,936, Cl. 179-18.00E.
Ponghis, Nikolas; and Masuy, Jean-Marie, to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie; and Societe Anonyme Cockerill. Injection of hot gases into shaft furnace. 4,363,656, Cl. 75-42.000.
Pons, Claude, to Videocolor (S.A.). Process of analysis of the convergence of a cathode-ray tube with three ganged guns and a device forming a pick-up allowing implementation of this process. 4,364,079, Cl. 358-10.000.
Ponsinet, Gerard: *See*—
Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,363,909, Cl. 544-238.000.
Ponzo, John L.: *See*—
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Ponzoni, Ronald W.: *See—*
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Popp, Frank, to Forfex Alfred Popp Haarpflegegerate GmbH. Combing curler. 4,363,334, Cl. 132-33.00R.
Postlethwait, James H.: *See—*
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Potts, Vinson S.: *See—*
Ruemer, John, Jr.; and Potts, Vinson S., 4,363,179, Cl. 40-307.000.
Poubeau, Pierre, to Societe Nationale Industrielle Aerospatiale. Magnetically suspended rotating bodies. 4,363,525, Cl. 308-10.000.
Pous, Jacques A. J.: *See—*
Bouiller, Jean G.; Pous, Jacques A. J.; and Joubert, Raymond J. M., 4,363,445, Cl. 239-265.350.
Powell, Calvin F. Plant container filling machine. 4,363,341, Cl. 141-78.000.
Pranaitis, Ronald B. Exhaust pipe heat exchanger. 4,363,353, Cl. 165-39.000.
Prasek, Josef: *See—*
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Preikschat, Fritz K. Electric propulsion and braking system for automotive vehicles. 4,363,999, Cl. 318-53.000.
Preisendanz, Walter: *See—*
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Presto Lock, Inc.: *See—*
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Preston, Edward G.; and Rakowicz, Jan A., to Molins Limited. Detection of rod-like articles. 4,363,332, Cl. 131-282.000.
Priarone, Paolo: *See—*
Achter, Eugene K.; Kremen, Jerome C.; Rodriguez, Rodolfo R.; and Priarone, Paolo, 4,363,551, Cl. 356-338.000.
Price, Rick A. Infrared heat treatment of plastic film capacitors. 4,363,162, Cl. 29-25.420.
Pridgen, Herman S.: *See—*
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Priesnitz, Uwe: *See—*
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Prigent, Michel; and Martin, Lucien, to Institut Francais du Petrole. Activated nickel-containing electrode and its use particularly for water electrolysis. 4,363,707, Cl. 204-129.000.
Prince Corporation: *See—*
Marcus, Konrad H., 4,363,512, Cl. 296-97.00G.
Probst, Heinz: *See—*
Gunther, Dieter; Erckel, Rudiger; Rosch, Gunter; and Probst, Heinz, 4,363,744, Cl. 252-301.220.
Procter & Gamble Company, The: *See—*
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Prohazka, George J.: *See—*
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Projectus Industriprodukter AB: *See—*
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Propheter, Howard L.: *See—*
Ury, Frank; Propheter, Howard L.; and Bird, Carlton A., 4,363,270, Cl. 101-180.000.
Prucyk, Martin D. Heat exchanger. 4,363,355, Cl. 165-81.000.
Prussia, Stanley E.: *See—*
O'Brien, Michael; Smith, Nelson E., Jr.; and Prussia, Stanley E., 4,363,408, Cl. 209-546.000.
Pryor, Michael J.; and Tyler, Derek E., to Olin Corporation. Continuous lubrication casting molds. 4,363,352, Cl. 164-418.000.
Pullman Incorporated: *See—*
Hesch, Harold; DiLuigi, Michael; and Lindauer, Thomas, 4,363,578, Cl. 410-56.000.
Purex Corporation: *See—*
Hackett, Walter J.; and Galena, Peter E., 4,363,835, Cl. 427-355.000.
Puskarz, Stanley J., to Barry-Wehmiller Company. Filling valve arrangement for counter-pressure container filling apparatus. 4,363,339, Cl. 141-39.000.
Pytlewski, Louis L.: *See—*
Soberman, Robert K.; Krevitz, Kenneth; and Pytlewski, Louis L., 4,363,965, Cl. 250-302.000.
Rabeh, Riadh H. A.; and Hemp, John. Fluid velocity meter. 4,363,244, Cl. 73-861.080.
Rabindran, K. George: *See—*
Flint, John R.; Hendrikson, Kenneth L.; and Rabindran, K. George, 4,363,457, Cl. 242-203.000.
Radiometer A/S: *See—*
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Radlin, Alexander. Antitheft garment hanger and device. 4,363,430, Cl. 223-88.000.
Rainville Company, Inc.: *See—*
Rainville, Dewey, 4,363,415, Cl. 215-100.00A.
Rainville, Dewey, to Rainville Company, Inc. Blow molded container with separate handle. 4,363,415, Cl. 215-100.00A.
Raitto, Russell G., to Concord Laboratories, Inc. Syringe having a reverse-taper barrel. 4,363,329, Cl. 128-765.000.
Rakowicz, Jan A.: *See—*
Preston, Edward G.; and Rakowicz, Jan A., 4,363,332, Cl. 131-282.000.
Ransome Hoffmann Pollard Ltd.: *See—*
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Rapp, William J., to Gardco Manufacturing, Inc. Luminaire cover locking apparatus. 4,364,108, Cl. 362-374.000.
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Jackson, Carroll V.; and Rau, Blase C., 4,363,571, Cl. 406-56.000.
Raucci, Charles C., Jr.; and Raucci, Timothy J., to Village Mold Co., Inc. Cassette storage container. 4,363,403, Cl. 206-387.000.
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Raucci, Charles C., Jr.; and Raucci, Timothy J., 4,363,403, Cl. 206-387.000.
Rauchle, Wilfried; Preisendanz, Walter; and Scholtissek, Leonhard, to Daimler-Benz Aktiengesellschaft. Process for exposing silicon crystals on the surface of a component of an aluminum alloy of high silicon content. 4,363,708, Cl. 204-129.750.
Raychem Limited: *See—*
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Raymond, Eugene T.: *See—*
Robinson, Curtiss W.; and Raymond, Eugene T., 4,363,211, Cl. 60-476.000.
RCA Corporation: *See—*
Becke, Hans W.; and Wheatley, Carl F., Jr., 4,364,073, Cl. 357-23.000.
French, Michael P.; and Tults, Juri, 4,364,094, Cl. 358-193.100.
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Holmes, David D., 4,364,092, Cl. 358-167.000.
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Stewart, Myron C., 4,364,121, Cl. 369-256.000.
Reczek, James A.; and Welter, Thomas R., to Eastman Kodak Company. Imido methyl blocked photographic dyes and dye releasing compounds. 4,363,865, Cl. 430-223.000.
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Brisabois, Roger, 4,363,248, Cl. 74-713.000.
Regina, Matthew J. Ice breaker. 4,363,155, Cl. 15-236.00R.
Reichenbach, Jerry D.; and Christiansen, Keith W., to Chicago Rawhide Manufacturing Company. Apparatus for unloading molded articles. 4,363,595, Cl. 414-749.000.
Reichl, Richard: *See—*
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Reiman, Georgy R.: *See—*
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Reisdorf, Daniel: *See—*
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Reitter, Erhardt, to Uniplanung Metall-und Kunststoff-Engineering GmbH & Co. KG. Tool for shaping sheet metal. 4,363,232, Cl. 72-350.000.
Remington, Richard C.; and Bako, Lazlo, to Presto Lock, Inc. Latching system for luggage articles. 4,363,226, Cl. 70-70.000.
Renal Systems, Inc.: *See—*
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,363,609, Cl. 417-477.000.
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Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Christ, Klaus H., 4,363,983, Cl. 310-68.00R.
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Renzel, Peter; and Kroesen, Klaus, to Krautkramer-Branson Incorporated. Method and apparatus for determining the acoustic velocity of a workpiece. 4,364,114, Cl. 364-565.000.
Rheinmetall GmbH: *See—*
Luebben, Manfred; and Witt, Wolfram, 4,363,273, Cl. 102-431.000.
Rhoades, Betty L.: *See—*
Rhoades, Deo A.; and Rhoades, Betty L., 4,363,417, Cl. 220-1.00T.
Rhoades, Deo A.; and Rhoades, Betty L. Dustless container for ashes or the like. 4,363,417, Cl. 220-1.00T.
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Farge, Daniel; Jossin, Alain; Ponsinet, Gerard; and Reisdorf, Daniel, 4,363,909, Cl. 544-238.000.
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Roullet, Gilbert; and Legrand, Pierre, 4,363,840, Cl. 428-35.000.
Rhone-Poulenc-Textile: *See—*
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Rich, Leonard G.: *See—*
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Richardson, Leonard H.; Mueller, Otto, Jr.; and Elfes, Lee E., to Massey-Ferguson Inc. Brake assembly. 4,363,384, Cl. 188-72.700.
Richey, Earl D.; and Dobson, Franklin A., to United States of America, Army. Z-Transfer device for ammunition. 4,363,397, Cl. 198-655.000.
Richey, Vernon T. Apparatus for use in maintaining a well pipe centered within a well bore. 4,363,360, Cl. 166-241.000.
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Jinnai, Koichiro; Horike, Masanori; Iwasaki, Kyuhachiro; and Kodama, Yutaka, 4,364,060, Cl. 346-75.000.
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Riken Vitamine Oil Co., Ltd.: *See—*
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Rinaldi, Fernando, to Saipem, S.p.A. Device for the back support of the first run weld pool in the automatic butt-welding of pipes. 4,363,954, Cl. 219-160.000.
Ripley, Wayne H. Ice making apparatus. 4,363,220, Cl. 62-138.000.
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Frister, Manfred; Renner, Stefan; Meyer, Friedhelm; and Christ, Klaus H., 4,363,983, Cl. 310-68.00R.
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Robinair Manufacturing Corporation: *See—*
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Robinson, Curtiss W.; and Raymond, Eugene T., to Boeing Company, The. Quasi-open loop hydraulic ram incremental actuator with power conserving properties. 4,363,211, Cl. 60-476.000.
Rockwell International Corporation: *See—*
Heimbigner, Gary L., 4,363,978, Cl. 307-451.000.
Minor, Timothy R., 4,363,976, Cl. 307-353.000.
Palovcik, John, 4,363,522, Cl. 301-131.000.
Rodier, Henry: *See—*
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Rodney, Peter W. Golf ball driving device. 4,363,311, Cl. 124-16.000.
Rodriguez, Alvaro. Lubrication pastes. 4,363,737, Cl. 252-26.000.
Rodriguez, Rodolfo R.: *See—*
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Roeder, Helmut R. Apparatus for preventing or alternatively restricting the discharge of anions and X-rays from the front side of cathode ray tubes. 4,364,095, Cl. 358-245.000.
Roesler, Richard R., to Henkel Corporation. Adhesive bonding process. 4,363,689, Cl. 156-307.300.
Rogers, Eugene A. Damage prevention void filler for separating loads during transit. 4,363,579, Cl. 410-154.000.
Rogier, Leonce E. R., to Societe Anonyme Francaise du Ferodo. Brake with axially expanding brake shoes. 4,363,383, Cl. 188-72.500.
Roline, Glenn; and Walmsley, Frank, to Medtronic, Inc. Mode adaptive pacer. 4,363,325, Cl. 128-419.0PG.
Roma, Pierpaolo: *See—*
Cicchetti, Osvaldo; Fontani, Spartaco; Landoni, Gianluigi; Locatelli, Renato; Bertelli, Guido; and Roma, Pierpaolo, 4,363,906, Cl. 528-248.000.
Rommler, Josef: *See—*
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Rooklyn, Jack. Bench with self-leveling production cart. 4,363,587, Cl. 414-401.000.
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Bacher, Stuart; Rosas, Carlos B.; and Sharkey, John J., 4,363,751, Cl. 252-469.000.
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Rosell, Jean, to La Perche. Latch having a releasable actuating rod. 4,363,506, Cl. 292-336.300.
Rosen, Marvin; and Hall, Larry K., to Glyco Inc. Glyceryl monostearate plastic lubricants. 4,363,891, Cl. 524-317.000.
Rossin, John A. Intruder detection system. 4,364,030, Cl. 340-567.000.
Roth, Augustin: *See—*
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Roto-Finish Company, Inc.: *See—*
Balz, Gunther W., 4,363,194, Cl. 51-163.100.
Roullet, Gilbert; and Legrand, Pierre, to Rhone-Poulenc Industries. Packaging films, sheets and blown or molded hollow bodies. 4,363,840, Cl. 428-35.000.
Roy, Ashim K.: *See—*
Cole, Peter H.; Eshraghian, Kamran; and Roy, Ashim K., 4,364,043, Cl. 340-825.540.
Rozovsky, Alexandr Y.; Stytsenko, Valentin D.; Nizova, Svetlana A.; Belov, Petr S.; and Dyakonov, Alexandr J. Catalyst for dehydrogenation of oxygen containing derivatives of the cyclohexane series into corresponding cyclic ketones and/or phenols. 4,363,750, Cl. 252-459.000.
Rozwadowski, Boleslaw; and Bucklew, Leonard E., to General Foods Corporation. Vibrating bin unloader. 4,363,589, Cl. 414-415.000.
Rudolph, Gunter: *See—*
Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, 4,363,757, Cl. 252-628.000.
Rued, Glen A.; and Simpson, Elmer J. Elevator and method of lifting. 4,363,380, Cl. 187-17.000.
Ruemer, John, Jr.; and Potts, Vinson S., to Crown Cork & Seal Company, Inc. Promotional can end. 4,363,179, Cl. 40-307.000.
Rugg, Barry A.; and Stanton, Robert, to New York University. Apparatus for chemical conversion of materials. 4,363,671, Cl. 127-1.000.
Rusch, Larry P.: *See—*
Graff, Eugene A.; and Rusch, Larry P., 4,363,998, Cl. 313-487.000.
Russell, Roger V.: *See—*
Buck, George S., Jr.; and Russell, Roger V., 4,363,680, Cl. 156-62.600.
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Rutledge, Robert L., to Minnesota Mining and Manufacturing Company. Colloid relief images by oxidized developer transfer. 4,363,864, Cl. 430-202.000.
S. C. Johnson & Son, Inc.: *See—*
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Sagae, Syoji: *See—*
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Sahar, Raphael. Automobile protecting sun shade. 4,363,513, Cl. 296-140.000.
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Scodino, Ambrogio; and Po, Fernando, 4,363,569, Cl. 405-303.000.
Sakai Manufacturing Co., Ltd.: *See—*
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Sakai, Yoshitaka, to Sakai Manufacturing Co., Ltd. Air cylinder. 4,363,260, Cl. 92-13.000.
Sakakibar, Naoji: *See—*
Kawata, Shoji; Nishimura, Tomoaki; Sakakibar, Naoji; Imai, Nobuyuki; Amano, Hiroyuki; and Hamajima, Shigemitsu, 4,363,973, Cl. 307-10.00R.
Sakato, Naoyuki; and Nakamura, Norio, to Shin-Etsu Chemical Co., Ltd. Priming compositions for a base of cement mortar or concrete. 4,363,836, Cl. 427-393.600.
Sakonooka, Akihiko: *See—*
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Sakurai, Kazuhiro: *See—*
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Salvadori, Lawrence A., to Plastronics, Inc. Fluid drainage bag with tear tab drain. 4,363,406, Cl. 206-604.000.
Salvo, Thomas R.: *See—*
Poirier, Victor L.; Buczak, Stanley D.; Lynch, Robert F.; and Salvo, Thomas R., 4,363,328, Cl. 128-728.000.
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Sanmiya, Tsugumi: *See*—
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Sarkison, Warren, to Load Cells Inc. Accurate weight measurement using digital to analog converter means and analog to digital converter means. 4,363,370, Cl. 177-210.00R.

Sasaki, Akiyoshi: *See*—
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Sasaki, Isao: *See*—
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Sasaki, Masaomi; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Electrophotographic photoconductor. 4,363,859, Cl. 430-59.000.

Sasayama, Takao: *See*—
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Saskatchewan Power Corporation: *See*—
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Satake, Yoshinori. Device for retaining inner shuttle member against rotation. 4,363,282, Cl. 112-184.000.

Sato, Akihiro: *See*—
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, 4,363,901, Cl. 526-97.000.

Sato, Hideo: *See*—
Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, 4,363,829, Cl. 427-53.100.

Sato, Koji: *See*—
Isshiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, 4,364,023, Cl. 340-146.30H.

Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, to Nippon Soken, Inc. Filter for purifying exhaust gas. 4,363,644, Cl. 55-523.000.

Sato, Yo; and Shibayama, Tooru, to Kabushiki Kaisha Sato. Drum type bar code line printer. 4,363,268, Cl. 101-110.000.

Sato, Yo, to Kabushiki Kaisha Sato. Index wheel for printing device. 4,363,269, Cl. 101-110.000.

Satoh, Hiromasa: *See*—
Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, 4,363,649, Cl. 65-158.000.

Satoh, Kiyoshi: *See*—
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Savagian, Michael D., to W. H. Brady Co. Sleeve marker assembly. 4,363,401, Cl. 206-345.000.

Scandella, Louis, to Stanley Mabo, S.A. Coilable rule and replacement cartridge therefor. 4,363,171, Cl. 33-138.000.

Schaefer, Edward F.; Lozynski, Lawrence R.; and Lorenzi, Donald E., to Magnaflux Corporation. Photographic pipeline inspection apparatus including an optical port wiper. 4,363,545, Cl. 354-63.000.

Schafer, Otto: *See*—
Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, 4,363,308, Cl. 123-533.000.

Schaffner, Jean-Claude; and Muller, Jacques, to ETA S.A., Fabriques d'Ebauches. Setting mechanism for an analog display watch. 4,363,554, Cl. 368-190.000.

Schall, Roy F., Jr., to Akzona Incorporated. Glass support coated with synthetic polymer for bioprocess. 4,363,634, Cl. 23-230.00B.

Scheibner, Gerald H., to Union Carbide Corporation. Reclosable container. 4,363,345, Cl. 150-3.000.

Scheidler, Herwig; and Keller, Gunther, to JENAer Glaswerk Schott & Gen. Cooking panel unit for installation in work surface. 4,363,956, Cl. 219-464.000.

Scheidweiler, Andreas; and Muller, Peter, to Cerberus AG. Ionization smoke detector with increased operational reliability. 4,364,031, Cl. 340-629.000.

Schenck, Hans-Uwe: *See*—
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,363,710, Cl. 204-181.00C.

Scherowsky, Guenther: *See*—
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Schindler, Peter V., to Angelus Sanitary Can Machine Company. Pouch filler nozzle and valve. 4,363,429, Cl. 222-504.000.

Schlanger, Alfred. Transmission brake band end connection. 4,363,385, Cl. 188-249.000.

Schlegel, Hans J.: *See*—
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Schloemann-Siemag Aktiengesellschaft: *See*—
Kirchhoff, Hans, 4,363,394, Cl. 198-369.000.

Schmelzer Corporation: *See*—
Spitzke, Arthur, 4,363,312, Cl. 124-45.000.

Schmid, Carl J., to Peerless Electronics Research Corp. Sampling apparatus. 4,363,245, Cl. 73-864.220.

Schmidt, Adolf; Jambor, Arno; and Huber, Guntram, to Daimler-Benz Aktiengesellschaft. Protective edge molding for vehicle parts. 4,363,838, Cl. 428-31.000.

Schmidt, Manfred; Hoyer, Gerd; Leiberich, Hermann; and Pietschmann, Helmut, to Sybron Corporation. Dental syringe. 4,363,626, Cl. 433-85.000.

Schmidt, Manfred: *See*—
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Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Pyridine color formers. 4,363,503, Cl. 282-27.500.

Schmidt, Peter. Method for manufacture of rubber granulate from old tires. 4,363,450, Cl. 241-24.000.

Schminke, Wolfgang: *See*—
Hilbig, Josef; Holst, Arno; Kunkler, Hans; Stolting, Klaus; and Schminke, Wolfgang, 4,363,784, Cl. 422-134.000.

Schmitt, Larry D., to Conchemco Incorporated. Method and apparatus for controlling blade clutch assembly. 4,363,206, Cl. 56-11.300.

Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Incremental measuring system with selectively designated reference marks. 4,363,964, Cl. 250-237.00G.

Schnable, George L.: *See*—
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Schobert, Monique A.: *See*—
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Scholtissek, Leonhard: *See*—
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Scholz, Donald T. Volume control device. 4,363,934, Cl. 179-1.0VL.

Schonwald, Siegfried; and Hecht, Gert, to Siemens Aktiengesellschaft. Multistage side-channel compressor. 4,363,598, Cl. 415-53.00T.

Schreiner, Charles P., to Westinghouse Electric Corp. Material handling cart. 4,363,496, Cl. 280-47.350.

Schreyer, Kenneth D., to Columbus McKinnon Corporation. Chain grab hook providing for a flat lay cross-over link. 4,363,509, Cl. 294-82.00R.

Schromm, Kurt: *See*—
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Schroter, Wilfried: *See*—
Koster, Rainer; Rudolph, Gunter; Gebauer, Rainer; Boch, Iris; Schroter, Wilfried; and Jakobs, Jurgen, 4,363,757, Cl. 252-628.000.

Schubert, John C.: *See*—
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Schubert, Wayne W.: *See*—
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Schuh, Frank J., to Atlantic Richfield Company. Conductors for a guyed tower and method for installing same. 4,363,568, Cl. 405-227.000.

Schultz, Peter C.: *See*—
Bachman, David L.; Lewis, William C., Jr.; Schultz, Peter C.; and Voorhees, Francis W., 4,363,647, Cl. 65-18.200.

Schulz, Donald N.: *See*—
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Schulze, Clayton E. Chip spreader. 4,363,447, Cl. 239-659.000.

Schumaker, Robert R.: *See*—
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Schupp, Eberhard: *See*—
Kempter, Fritz E.; Schupp, Eberhard; Schenck, Hans-Uwe; and Gulbins, Erich, 4,363,710, Cl. 204-181.00C.

Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung: *See*—
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Schwickert, Russell C.: *See*—
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Scodino, Ambrogio; and Po, Fernando, to Saipem S.p.A. Apparatus for supporting and erecting supporting means for supporting undersea pipelines at all depths. 4,363,569, Cl. 405-303.000.

Scott, Bruce A.: *See*—
Brodsky, Marc H.; and Scott, Bruce A., 4,363,828, Cl. 427-39.000.

Scott & Fetzer Company, The: *See*—
Karpanty, David J., 4,363,152, Cl. 15-98.000.
Knowlton, Christopher M., 4,363,151, Cl. 15-83.000.

Scott, Janet. Portable back rest. 4,363,517, Cl. 297-377.000.

Searle, Russell J. Piston and cylinder machines. 4,363,294, Cl. 123-43.00A.

Secor, Vincent E., to Stavo Industries, Inc. Shaft seal assembly. 4,363,491, Cl. 277-81.00R.

Seeburg, Peter H.: *See*—
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,363,877, Cl. 435-317.000.

Semenkov, Leonid I.: *See*—
Vorotyntseva, Ljudmila A.; Florinsky, Eduard A.; Semenkov, Leonid I.; and Sysoev, Valentin S., 4,363,987, Cl. 310-216.000.

Sengebusch, Peter; and Nowack, Horst, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Crack development measuring equipment. 4,364,113, Cl. 364-507.000.

Senn-Bilfinger, Jorg, to BYK Gulden Lomberg Chemische Fabrik Gesellschaft mit beschrankter Haftung. Tricyclic pyrroles, their compositions and their use. 4,363,816, Cl. 424-274.000.

Seplast: *See*—
Thiebault, Bernard, 4,363,682, Cl. 156-181.000.

Septier, Louis: *See*—
Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, 4,363,657, Cl. 75-80.000.

Sepulveda, Ralph R.; and Lander, Lynn H., to Lever Brothers Company. Pretreatment composition for stain removal. 4,363,756, Cl. 252-550.000.

Serrao, Carlton. Locking mechanism for ranges. 4,363,228, Cl. 70-177.000.

Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, to Fuji Photo Film Co., Ltd. Process for forming an electrically conductive film. 4,363,829, Cl. 427-53.100.

Seton Company: *See*—
Cioca, Gheorghe, 4,363,760, Cl. 260-123.700.

Settineri, William J.; Klassen, Harold E.; and Tolly, Milton C., to Dow Chemical Company, The. Process for the removal of carbon from solid surfaces. 4,363,673, Cl. 134-2.000.

Seymour of Sycamore, Inc.: *See*—
Leep, Gus W., 4,363,887, Cl. 523-402.000.

Shafer, Donald E., to Honeywell Inc. Electrographic recording. 4,364,071, Cl. 346-153.100.

Shain, Albert L., to Du Pont de Nemours, E. I., and Company. Thermoplastic copolyester elastomers modified with salts of phenolic compounds. 4,363,892, Cl. 524-327.000.

Sharkey, John J.: *See*—
Bacher, Stuart; Rosas, Carlos B.; and Sharkey, John J., 4,363,751, Cl. 252-469.000.

Sharp Kabushiki Kaisha: *See*—
Aiba, Masahiko, 4,364,055, Cl. 346-1.100.
Fukuda, Hiroaki; and Imai, Shigeki, 4,364,041, Cl. 340-785.000.
Matsui, Hirotoshi, 4,364,062, Cl. 346-75.000.
Mattori, Horoaki; and Tateishi, Iwao, 4,363,523, Cl. 303-92.000.
Take, Hiroshi; Koyanagi, Katubumi; and Uede, Hisashi, 4,364,040, Cl. 340-785.000.

Sharp, Spencer G., to Pacific Gas and Electric Company. H_2S Abatement process. 4,363,215, Cl. 60-641.200.

Shell Oil Company: *See*—
Van der Graaf, Gerhardus C., 4,363,567, Cl. 405-195.000.

Sherwin-Williams Company, The: *See*—
Long, John W.; and Vacek, Lubomir, 4,363,914, Cl. 548-257.000.

Shibayama, Tooru: *See*—
Sato, Yo; and Shibayama, Tooru, 4,363,268, Cl. 101-110.000.

Shibue, Toshiaki; Nagayasu, Koichi; Kobayashi, Tohru; and Tokitou, Kouji, to Konishiroku Photo Industry Co., Ltd. Light-sensitive photographic material. 4,363,871, Cl. 430-523.000.

Shibuya Kogyo Co., Ltd.: *See*—
Ohude, Masao; and Kawamura, Duro, 4,363,204, Cl. 53-381.00A.

Shida, Takao, to Fujitsu Limited. Focussing apparatus with plural emitter-detector pairs. 4,363,962, Cl. 250-201.000.

Shiga, Atsushi, to Kawasaki Steel Corporation. Both-side single layer, high speed submerged arc welding process. 4,363,951, Cl. 219-73.000.

Shigematsu, Kazuo: *See*—
Maeda, Takeshi; Shigematsu, Kazuō; and Yonezawa, Seiji, 4,364,118, Cl. 369-44.000.

Shimada, Katsutoshi: *See*—
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,363,921, Cl. 549-74.000.

Shimizu, Kazunari, to Iwatsu Electric Co., Ltd. Composite logic analyzer capable of data display in two time-related formats. 4,364,036, Cl. 340-715.000.

Shimizu, Tetsuo; and Koizumi, Shun, to Daikin Kogyo Co., Ltd. Process for preparing polytetrafluoroethylene fine powder. 4,363,900, Cl. 526-83.000.

Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, to Kawasaki Steel Corporation. Steel strip continuous annealing apparatus. 4,363,472, Cl. 266-111.000.

Shimoyama, Yuji: *See*—
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Sakato, Naoyuki; and Nakamura, Norio, 4,363,836, Cl. 427-393.600.

Shine, John: *See*—
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,363,877, Cl. 435-317.000.

Shinkai, Kinya: *See*—
Isono, Katsuo; Miyaoka, Senri; and Shinkai, Kinya, 4,364,083, Cl. 358-69.000.

Shinohara, Masao, to Tomy Kogyo Co., Inc. Toy capable of repeatedly upsetting and then righting itself. 4,363,187, Cl. 46-211.000.

Shinohara, Tosio: *See*—
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,363,889, Cl. 523-513.000.

Shinshu Seiki Kabushiki Kaisha: *See*—
Koto, Haruhiko, 4,364,066, Cl. 346-140.00R.
Koto, Haruhiko; and Okada, Junichi, 4,364,067, Cl. 346-140.00R.

Shirahata, Isao; Kitamura, Nobu; Nakamura, Nobuyuki; and Hori, Hisako, to Furukawa Electric Co., Ltd., The. Process for cross-linking polyester series resin. 4,363,899, Cl. 525-437.000.

Shirai, Hitoshi: *See*—
Hashimoto, Akira; and Shirai, Hitoshi, 4,363,547, Cl. 354-212.000.

Shirasu, Katsunori: *See*—
Tsunoda, Sachio; and Shirasu, Katsunori, 4,363,597, Cl. 415-1.000.

Shirota, Norihisa: *See*—
Hashimoto, Yoshitaka; Shirota, Norihisa; and Yamamoto, Kaichi, 4,364,081, Cl. 358-13.000.

Shiun, Toshimi; and Fujii, Hideo, to Clarion Co., Ltd. Data-transmission and data-processing system. 4,364,042, Cl. 340-825.040.

Shoemaker, Richard G., to Pfizer Inc. Security seal for containers. 4,363,421, Cl. 220-319.000.

Showa Denko K.K.: *See*—
Akashiba, Takeo; Nakayama, Akira; and Murata, Atsuhiko, 4,363,875, Cl. 435-108.000.

Showell, Graham A.: *See*—
Evans, John M.; Showell, Graham A.; and Fake, Charles S., 4,363,811, Cl. 424-267.000.

Shrader, Donald R.: *See*—
Hill, Herbert M.; and Shrader, Donald R., 4,363,453, Cl. 241-222.000.

Shushlebin, Boris A.; Bogdanov, Nikolai A.; Tregubenko, Viktor V.; Subbotin, Nikolai I.; and Galkin, Mikhail V. Process for combined production of metal alloys and zirconium corundum. 4,363,658, Cl. 75-84.000.

Shyam, Megha: *See*—
Smith, Paul W.; Freeman, James J.; Forsythe, Donald D.; Shyam, Megha; Yagura, Kenneth K.; and Wetlesen, Gunnar, 4,364,078, Cl. 357-52.000.

SI Handling Systems, Inc.: *See*—
Kaji, Kazusuke, 4,363,275, Cl. 104-166.000.

Sibert, Frederick J.: *See*—
Goretta, Louis A.; and Sibert, Frederick J., 4,363,752, Cl. 252-475.000.

Sidenstick, James E.: *See*—
Cline, Larry D.; Hauser, Ambrose A.; Sidenstick, James E.; and Zlatic, Mark S., 4,363,599, Cl. 415-136.000.

Siemens Aktiengesellschaft: *See*—
Baues, Peter, 4,364,064, Cl. 346-107.00R.
Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, 4,363,712, Cl. 204-199.000.
Heinzl, Alfred; and Stadler, Heinz, 4,363,426, Cl. 222-134.000.
Kusserow, Bernd, 4,363,324, Cl. 128-419.00R.
Moeller, Alexander; and Scherowsky, Guenther, 4,363,743, Cl. 252-299.100.
Nossek, Josef, 4,364,116, Cl. 364-825.000.
Schonwald, Siegfried; and Hecht, Gert, 4,363,598, Cl. 415-53.00T.

Siggen, Guy: *See*—
Vulliens, Philippe; and Siggen, Guy, 4,363,235, Cl. 73-38.000.

Silbernagel, John P.: *See*—
Cosentino, Louis C.; Niemi, Bill H.; Silbernagel, John P.; and Cooper, Jamshed R., 4,363,609, Cl. 417-477.000.

Simmons, Bjorn, to Aktiebolaget Bofors. Device for an electric igniter. 4,363,272, Cl. 102-202.130.

Simons, Bill R., to Evans, Max K. Splice stabilizer. 4,363,931, Cl. 174-135.000.

Simpson, Elmer J.: *See*—
Rued, Glen A.; and Simpson, Elmer J., 4,363,380, Cl. 187-17.000.

Sinclair, Robert I.; Anderson, Verner; Logan, David J.; and Rich, Leonard G., to Gulf & Western Corporation. Method, system and apparatus for cutting profiles from natural leaves. 4,363,330, Cl. 131-105.000.

Singh, Kanwal N. Water heating system having a heat pump. 4,363,221, Cl. 62-238.600.

Sitte, Hellmuth, to C. Reichert Optische Werke, AG. Apparatus for specimen treatment. 4,363,783, Cl. 422-68.000.

Sjoberg, Ake L.; Sjoberg, Per E.; and Sjogren, Frans B. Device on a motor-driven vehicle to detect an obstacle in the way of the vehicle during backing. 4,363,376, Cl. 180-275.000.

Sjoberg, Per E.: *See*—
Sjoberg, Ake L.; Sjoberg, Per E.; and Sjogren, Frans B., 4,363,376, Cl. 180-275.000.

Sjogren, Frans B.: *See*—
Sjoberg, Ake L.; Sjoberg, Per E.; and Sjogren, Frans B., 4,363,376, Cl. 180-275.000.

Slingsby, Barry: *See*—
Christain, Ronald W.; Pommerening, Uwe A.; Russell, Stanley L.; Slingsby, Barry; and West, Julian W., 4,363,936, Cl. 179-18.00E.

Slovinsky, Manuel, to Nalco Chemical Company. 1,3-Dihydroxy acetone as an oxygen scavenger for water. 4,363,734, Cl. 210-750.000.

Smallwood, Paul R., Jr.: *See*—
Watson, Thomas E.; and Smallwood, Paul R., Jr., 4,363,596, Cl. 415-1.000.

Smejkal, George, to Extel Corporation. Tape reader motor mount. 4,363,461, Cl. 248-655.000.

Smith, Alvin J. Pipe coupling. 4,363,505, Cl. 285-369.000.

Smith International, Inc.: *See*—
Dixon, Robert L.; and Maxsted, Malcolm D., 4,363,367, Cl. 175-340.000.
Morrill, Charles D., 4,363,465, Cl. 251-214.000.

Smith, Nelson E., Jr.: *See*—
O'Brien, Michael; Smith, Nelson E., Jr.; and Prussia, Stanley E., 4,363,408, Cl. 209-546.000.

Smith, Paul W.; Freeman, James J.; Forsythe, Donald D.; Shyam, Megha; Yagura, Kenneth K.; and Wetlesen, Gunnar, to Synertek. Edge barrier of polysilicon and metal for integrated circuit chips. 4,364,078, Cl. 357-52.000.

Smith, Robert J. Portable campfire fireplace. 4,363,313, Cl. 126-9.00R.

Smith, Robert L. Easy fret. 4,363,256, Cl. 84-317.000.

Smith, Russell D.: *See—*
Kucheria, Chhattar S.; and Smith, Russell D., 4,363,199, Cl. 52-221.000.

Smith, Stuart B., to Cellofoam A.G. Method of making uniformly-sized expandable polymeric particles. 4,363,881, Cl. 521-56.000.

Snelgrove, Brian: *See—*
Bloomfield, Edward J.; and Snelgrove, Brian, 4,364,011, Cl. 324-174.000.

Snow, Gordon L., to Edo Western Corporation. Shock-hardened, high pressure ceramic sonar transducer. 4,364,117, Cl. 367-152.000.

Snow, John E., to Champion International Corporation. Laminated packaging material. 4,363,841, Cl. 428-35.000.

Soberman, Robert K.; Krevitz, Kenneth; and Pytlewski, Louis L., to Franklin Institute, The. Detection and identification method employing mossbauer isotopes. 4,363,965, Cl. 250-302.000.

Societe Anonyme Cockerill: *See—*
Ponghis, Nikolas; and Masuy, Jean-Marie, 4,363,656, Cl. 75-42.000.

Societe Anonyme dite: L'Oreal: *See—*
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, 4,363,796, Cl. 424-61.000.
Jacquet, Bernard; Papantoniou, Christos; Land, Gerard; and Forestier, Serge, 4,363,797, Cl. 424-70.000.

Societe Anonyme Francaise du Ferodo: *See—*
Rogier, Leonce E. R., 4,363,383, Cl. 188-72.500.

Societe D'Assistance Technique pour Produits Nestle S.A.: *See—*
Willi, Albert; Maute, Willy; and Mooser, Oswaldo, 4,363,824, Cl. 426-589.000.

Societe d'Etudes de Machines Thermiques S.E.M.T.: *See—*
Munoz, Bernard; and Tavenne, Eric, 4,363,293, Cl. 123-41.380.

Societe Francaise d'Electrometallurgie Sofrem: *See—*
Boscaro, Louis; Demange, Michel; Bucher, Jean-Philippe; Dubrous, Francis; and Septier, Louis, 4,363,657, Cl. 75-80.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
Bouiller, Jean G.; Pous, Jacques A. J.; and Joubert, Raymond J. M., 4,363,445, Cl. 239-265.350.

Societe Nationale Industrielle Aerospatiale: *See—*
Poubeau, Pierre, 4,363,525, Cl. 308-10.000.

SODEX-MAGISTER, Societe d'Exploitation des Brevets Neiman: *See—*
Lipschutz, Paul, 4,363,230, Cl. 70-370.000.

Solvay & Cie.: *See—*
DeCeuster, Jean; Essemaeker, Paul; Bouillet, Edmond; Decamps, Alain; and Ledoux, Pierre, 4,363,699, Cl. 162-71.000.

Sommer, Friedrich: *See—*
De Boer, Jacob; Sanderson, Hendrik J.; and Sommer, Friedrich, 4,364,097, Cl. 360-70.000.

Sone, Kohki; Okamura, Kenji; and Nakagawa, Toyoaki, to Nissan Motor Co., Ltd. System for feedback control of air/fuel ratio in IC engine having means for supplying controlled current to oxygen sensor. 4,363,306, Cl. 123-440.000.

Sony Corporation: *See—*
Hashimoto, Yoshitaka; Shirota, Norihisa; and Yamamoto, Kaichi, 4,364,081, Cl. 358-13.000.
Isono, Katsuo; Miyaoka, Senri; and Shinkai, Kinya, 4,364,083, Cl. 358-69.000.
Nishigaki, Susumu; Murano, Kanji; and Watanabe, Yoshihisa, 4,363,993, Cl. 310-332.000.

Sony/Tektronix: *See—*
Murooka, Rikichi, 4,364,027, Cl. 340-347.0CC.

Sorensen, Egon, to AMF Incorporated. Interval timer. 4,363,943, Cl. 200-38.00R.

Soucy, Armand L. Window mounting system. 4,363,192, Cl. 49-453.000.

Sperry Corporation: *See—*
Tanski, William J., 4,364,016, Cl. 333-193.000.

Spiegel, Leo, to Northrop Corporation. Digitized displacement transducer. 4,364,045, Cl. 340-870.310.

Spils, Richard W. Angle globe valve. 4,363,464, Cl. 251-121.000.

Spitzke, Arthur, to Schmelzer Corporation. Bow mounted quiver. 4,363,312, Cl. 124-45.000.

Sprengel, Ernst-Helmuth, to Blohm & Voss AG. Split topping lift gear. 4,363,410, Cl. 212-190.000.

Stacey, Ronald J.: *See—*
Rennison, Stuart C.; and Stacey, Ronald J., 4,363,866, Cl. 430-290.000.

Stadler, Heinz: *See—*
Heinzl, Alfred; and Stadler, Heinz, 4,363,426, Cl. 222-134.000.

Stahl, Lawrence E., to Hardee's Food Systems, Inc. Control of range hood emissions. 4,363,642, Cl. 55-233.000.

Standard Oil Company (Indiana): *See—*
Hirschberg, Eugene H.; Bertolacini, Ralph J.; and Modica, Frank S., 4,363,720, Cl. 208-120.000.
Klotz, Marvin R., 4,363,718, Cl. 208-110.000.
Le Duc, Edward C.; and Schubert, John C., 4,363,848, Cl. 428-286.000.

Stanley Electric Co.: *See—*
Kubota, Yutaka, 4,364,088, Cl. 358-106.000.

Stanley Mabo, S.A.: *See—*
Scandella, Louis, 4,363,171, Cl. 33-138.000.

Stanton, Robert: *See—*
Rugg, Barry A.; and Stanton, Robert, 4,363,671, Cl. 127-1.000.

State University of New York: *See—*
Blau, Monte; and Kung, Hank F., 4,363,793, Cl. 424-1.000.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 4,363,804, Cl. 424-200.000.

Stavo Industries, Inc.: *See—*
Secor, Vincent E., 4,363,491, Cl. 277-81.00R.

Steckler, Steven A.; and Balaban, Alvin R., to RCA Corporation. Digital-to-analog converter useful in a television receiver. 4,364,026, Cl. 340-347.0DA.

Steeg, Michael: *See—*
Hodes, Erich; Steeg, Michael; and Lippok, Peter, 4,363,854, Cl. 428-632.000.

Steffen, Remy A. E. Sausage-casing loading method and casing/sleeve combination therefor. 4,363,819, Cl. 426-132.000.

Stein, James A.: *See—*
Braly, Douglas E.; and Stein, James A., 4,363,516, Cl. 297-195.000.

Stelck, Larry W. Apparatus for forming protuberances on a line. 4,363,613, Cl. 425-237.000.

Stenograph Corporation: *See—*
Fowler, Paul J.; and Chvojcsek, Frank, 4,363,557, Cl. 400-91.000.
Michals, Richard A.; Mozer, Frank H.; and Zum Bahlen, Ralph E., 4,363,558, Cl. 400-94.000.

Sterling Drug Inc.: *See—*
Delaney, John W., 4,363,664, Cl. 106-21.000.
Lesher, George Y.; and Brundage, Ruth P., 4,363,911, Cl. 546-257.000.
Schmidt, Paul J.; and Hung, William M., 4,363,503, Cl. 282-27.500.

Steven Manufacturing Company: *See—*
Klawitter, Ronald R., 4,363,494, Cl. 280-11.280.

Stewart, Myron C., to RCA Corporation. Pickup cartridge for video disc player. 4,364,121, Cl. 369-256.000.

Stickney, Arwood D. Refuse handling system. 4,363,588, Cl. 414-408.000.

Stix, Thomas H.: *See—*
Yamada, Masaaki; Furth, Harold P.; Stix, Thomas H.; and Todd, Alan M. M., 4,363,776, Cl. 376-137.000.

Stock, Hugo; and Tholen, Paul, to Klockner-Humboldt-Deutz Aktiengesellschaft. Braking device for a four-cycle engine of a vehicle. 4,363,301, Cl. 123-321.000.

Stoeger, Klaus: *See—*
Birkle, Siegfried; Gehring, Johann; and Stoeger, Klaus, 4,363,712, Cl. 204-199.000.

Stolting, Klaus: *See—*
Hilbig, Josef; Holst, Arno; Kunkler, Hans; Stolting, Klaus; and Schminke, Wolfgang, 4,363,784, Cl. 422-134.000.

Stone, Milton, to Pettibone Corporation. Method and apparatus for making battery paste. 4,363,742, Cl. 252-182.100.

Storey, Richard; and Roberts, Alan, to British Broadcasting Corporation. Movement detector for television signals. 4,364,087, Cl. 358-105.000.

Stork Brabant B.V.: *See—*
Blaak, Cornelis, 4,363,833, Cl. 427-211.000.

Stowe, David W.; Christian, John D., deceased; by Christian, Albert, heir; by Christian, Martha R., heir; by Ziegler, Ann L., heir; and by Christian, David A., heir, to Gould Inc. Concentric fiber optical transducer. 4,363,533, Cl. 350-96.330.

Strandell, Per-Olof. Method and apparatus for forging sections. 4,363,234, Cl. 72-402.000.

Strickland, Benjamin W. Solar furnace supporting apparatus. 4,363,354, Cl. 165-67.000.

Stromberg-Carlson Corporation: *See—*
Christain, Ronald W.; Pommerening, Uwe A.; Russell, Stanley L.; Slingsby, Barry; and West, Julian W., 4,363,936, Cl. 179-18.00E.

Strozyk, Rudolf-Helmut: *See—*
Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, 4,363,308, Cl. 123-533.000.

Studer, Raymond: *See—*
Thomi, Michel; and Studer, Raymond, 4,363,553, Cl. 368-140.000.

Stugart, Jerald L. Safety apparatus for vehicles having automatic transmissions. 4,363,249, Cl. 74-850.000.

Stytsenko, Valentin D.: *See—*
Rozovsky, Alexandr Y.; Stytsenko, Valentin D.; Nizova, Svetlana A.; Belov, Petr S.; and Dyakonov, Alexandr J., 4,363,750, Cl. 252-459.000.

Subbotin, Nikolai I.: *See—*
Shushlebin, Boris A.; Bogdanov, Nikolai A.; Tregubenko, Viktor V.; Subbotin, Nikolai I.; and Galkin, Mikhail V., 4,363,658, Cl. 75-84.000.

Suda, Seiji: *See—*
Amano, Matsuo; Mouri, Yasunori; Abe, Osamu; Suda, Seiji; and Sasayama, Takao, 4,363,307, Cl. 123-492.000.

Suga, Asakichi. Device for driving screw, pin, rivet or the like. 4,363,250, Cl. 81-455.000.

Suga, Yozo: *See—*
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, 4,363,677, Cl. 148-111.000.

Suisman & Blumenthal, Incorporated: *See—*
Dresty, John E., Jr.; and Klein, Eugene M., 4,363,722, Cl. 209-3.000.

Sullivan, David J.: *See—*
Buckler, Sheldon A.; Burns, Jeffrey B.; Kniazzeh, Alfredo G.; Plasse, Paul A.; and Sullivan, David J., 4,363,407, Cl. 209-3.300.

Sumitomo Electric Industries, Ltd.: *See—*
Isshiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, 4,364,023, Cl. 340-146.30H.

Sunada, Tomonori: *See—*
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.

Sunago, Katsuyoshi: *See*—
Isshiki, Isao; Sato, Koji; Sunago, Katsuyoshi; Ohoka, Akihiro; and Akatsuka, Masayuki, 4,364,023, Cl. 340-146.30H.

Sunami, Hideo: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.

Susor, William C., to Masstron Scale Inc. Overhead track scale. 4,363,369, Cl. 177-163.000.

Sutyagin, Oleg Y.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.

Suzor, Norland L. C.: *See*—
Bouvet, Pierre E.; and Suzor, Norland L. C., 4,363,636, Cl. 44-10.00A.

Suzuki, Hajime; and Arakawa, Akio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Control of operation of loom. 4,364,002, Cl. 318-467.000.

Suzuki, Hitoshi: *See*—
Ohgami, Masaaki; and Suzuki, Hitoshi, 4,363,305, Cl. 123-440.000.

Suzuki, Munetoshi: *See*—
Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, 4,363,471, Cl. 266-111.000.

Suzuki, Takami; and Hasegawa, Takashi, to Ricoh Co., Ltd. Print wheel mounting assembly for serial printer. 4,363,559, Cl. 400-175.000.

Suzuki, Yasoji: *See*—
Masuda, Eiji; and Suzuki, Yasoji, 4,364,028, Cl. 340-347.0NT.

Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, to Yokogawa Electric Works, Ltd. Interactive graphic system. 4,364,056, Cl. 346-29.000.

Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, to Yazaki Corporation. Wire harness. 4,363,165, Cl. 29-564.800.

Suzuki, Yuji: *See*—
Kuriyama, Kiyoshi; Nakano, Jun; Itikawa, Kiyonosin; Ito, Kiyoshi; Suzuki, Yuji; and Ishizuki, Katsuro, 4,363,812, Cl. 424-269.000.

Suzuki, Yuzuru: *See*—
Torii, Michihiro; Okuda, Masanao; and Suzuki, Yuzuru, 4,363,984, Cl. 310-156.000.

Swiss Aluminium Ltd.: *See*—
Bloeck, Siegfried; and Luthi, Rudolf, 4,363,582, Cl. 413-12.000.

Sybron Corporation: *See*—
Schmidt, Manfred; Hoyer, Gerd; Leiberich, Hermann; and Pietschmann, Helmut, 4,363,626, Cl. 433-85.000.

Synertek: *See*—
Smith, Paul W.; Freeman, James J.; Forsythe, Donald D.; Shyam, Megha; Yagura, Kenneth K.; and Wetlesen, Gunnar, 4,364,078, Cl. 357-52.000.

Sysoev, Valentin S.: *See*—
Vorotyntseva, Ljudmila A.; Florinsky, Eduard A.; Semenkov, Leonid I.; and Sysoev, Valentin S., 4,363,987, Cl. 310-216.000.

Szabo, Georges: *See*—
Engelhard, Philippe; and Szabo, Georges, 4,363,721, Cl. 208-139.000.

Szabolcsi, Tamas: *See*—
Ambrus, Dezso; Szabolcsi, Tamas; and Hutas, Istvan, 4,363,910, Cl. 546-172.000.

Szewczyk, Richard S., to USM Corporation. Multi worm-rack apparatus. 4,363,246, Cl. 74-89.140.

Szvoboda, Gyuml/o/ rgy: *See*—
Gado, Istvan; Jekkel nee Bokany, Antonia; Szvoboda, Gyuml/o/rgy; Jarai, Miklos; Piukovich, Sandor; and Istvan, Sandor, 4,363,876, Cl. 435-253.000.

Tachibana, Masami: *See*—
Kikuta, Kazutsune; Tachibana, Masami; and Sato, Akihiro, 4,363,901, Cl. 526-97.000.

Tachikawa, Hajime; Watanabe, Mitsuru; and Yokoyama, Kenjiro, to Hitachi Heating Appliances Co., Ltd. Heating apparatus with char detecting and heating controller. 4,363,957, Cl. 219-497.000.

Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Equalizing pulse removal circuit. 4,364,091, Cl. 358-148.000.

Takada, Juichiro. Passive type vehicle occupant restraint belt system. 4,363,501, Cl. 280-804.000.

Takada, Kazuo: *See*—
Umeki, Shinji; and Takada, Kazuo, 4,363,831, Cl. 427-127.000.

Takada, Masahiko: *See*—
Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, 4,363,903, Cl. 526-273.000.

Takahashi, Kentaro; Hiraoka, Takeshi; and Urano, Shigeru, to Nippon Piston Ring Co., Ltd. Abrasion resistant ferro-based sintered alloy. 4,363,662, Cl. 75-243.000.

Takahashi, Kyoichi: *See*—
Tonomura, Kenichi; and Takahashi, Kyoichi, 4,364,082, Cl. 358-28.000.

Takahashi, Motohide: *See*—
Tsuda, Toshitaka; Murano, Kazuo; Yamaguchi, Kazuo; Chujo, Takafumi; Murakami, Norio; and Takahashi, Motohide, 4,363,977, Cl. 307-358.000.

Takahashi, Sankichi: *See*—
Koseki, Yasuo; Yamada, Akira; Nishimura, Yousaku; and Takahashi, Sankichi, 4,363,219, Cl. 62-101.000.

Takahashi, Tohru: *See*—
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, 4,363,861, Cl. 430-97.000.

Takahashi, Yutaka: *See*—
Aihara, Mamoru; Takahashi, Yutaka; Nakajima, Yoshio; and Matsuura, Tsuyoshi, 4,363,541, Cl. 354-23.00D.

Takasaki, Kanetake; and Maeda, Mamoru, to Fujitsu Limited. Process of producing semiconductor devices by forming a silicon oxynitride layer by a plasma CVD technique which is employed in a selective oxidation process. 4,363,868, Cl. 430-314.000.

Takaya, Takao; Masugi, Takashi; and Chiba, Toshiyuki, to Fujisawa Pharmaceutical Company, Limited. Cepham compounds. 4,363,807, Cl. 424-246.000.

Takayama, Teruo, to Hitachi, Ltd. Throttle valve opening control device. 4,363,303, Cl. 123-339.000.

Take, Hiroshi; Koyanagi, Katubumi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Electrochromic display driver with faculties of stabilizing coloration contrast and insuring uniform bleaching condition. 4,364,040, Cl. 340-785.000.

Takehara, Keishin: *See*—
Yamamoto, Osamu; Takehara, Keishin; and Yasiro, Yutaka, 4,363,878, Cl. 501-36.000.

Takeuchi, Masaki: *See*—
Akamatsu, Akihiro; Takeuchi, Masaki; and Yamashita, Kiyoshi, 4,363,781, Cl. 422-65.000.

Takeuchi, Yukihisa: *See*—
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,363,644, Cl. 55-523.000.

Taki, Tooru: *See*—
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,363,889, Cl. 523-513.000.

Takigawa, Tadahiro; Sasaki, Isao; and Tsuji, Kazuo, to Tokyo Shibaura Denki Kabushiki Kaisha; and Toshiba Machine Company Limited. Electron gun. 4,363,995, Cl. 313-346.00R.

Takimoto, Hiroyuki: *See*—
Nemoto, Takayuki; and Takimoto, Hiroyuki, 4,363,544, Cl. 354-60.00R.

Takimoto, Masaaki: *See*—
Seshimoto, Osamu; Nomaguchi, Hirotsugu; Horie, Seiji; Sato, Hideo; Takimoto, Masaaki; and Kubotera, Kikuo, 4,363,829, Cl. 427-53.100.

Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., to Canon Kabushiki Kaisha; and Texas Instruments Incorporated. Exposure information storage device for a photographic camera. 4,363,540, Cl. 354-23.00D.

Tamai, Masayoshi; Ueda, Michio; and Kikuchi, Masatsugu, to Fuji Xerox Co., Ltd. Ink drop charging device. 4,364,058, Cl. 346-75.000.

Tamura, Yasuyuki: *See*—
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, 4,363,861, Cl. 430-97.000.

Tanabe, Hiroyuki: *See*—
Hoshino, Minoru; Shinohara, Tosio; Tanabe, Hiroyuki; Taki, Tooru; and Nakayama, Shunsuke, 4,363,889, Cl. 523-513.000.

Tanaka, Honami: *See*—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.

Tanaka, Kazuyoshi: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,363,885, Cl. 523-212.000.

Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, to Eisai Co., Ltd. Cyanoguanidine derivatives. 4,363,921, Cl. 549-74.000.

Tancredi, Henry J.: *See*—
Del Bianco, Matthew A.; and Tancredi, Henry J., 4,363,455, Cl. 242-75.500.

Tanioka, Susumu; Sasaki, Akiyoshi; and Hoshino, Shozi, to Tokyo Electric Co., Ltd. Adjustable pulp outlet for juice extractor. 4,363,265, Cl. 99-510.000.

Tannerstal, Harding, to Bruks Mekaniska AB. Log milling apparatus. 4,363,342, Cl. 144-2.00R.

Tanski, William J., to Sperry Corporation. Method for post fabrication frequency trimming of surface acoustic wave devices. 4,364,016, Cl. 333-193.000.

Tapper, William R. Gutter cleaner. 4,363,335, Cl. 134-167.00C.

Tasch, Aloysious F., Jr.: *See*—
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., 4,364,076, Cl. 357-24.000.

Tateishi, Iwao: *See*—
Mattori, Horoaki; and Tateishi, Iwao, 4,363,523, Cl. 303-92.000.

Tattersall, Edward G., to Vosper Hovermarine Limited. Gas-cushion vehicles. 4,363,372, Cl. 180-118.000.

Tavenne, Eric: *See*—
Munoz, Bernard; and Tavenne, Eric, 4,363,293, Cl. 123-41.380.

Taylor, Donald F.; and Boyle, William G., to Otis Engineering Corporation. Locking assembly for well devices. 4,363,359, Cl. 166-214.000.

Taylor, John J.: *See*—
Carr, Susan H.; Schobert, Monique A.; and Taylor, John J., 4,363,449, Cl. 241-21.000.
Taylor, Joseph B.: *See*—
Knoll, Frank S.; Taylor, Joseph B.; and Hoyles, Peter J., 4,363,723, Cl. 209-128.000.
Tazuke, Kazuo: *See*—
Yamazaki, Osamu; Inohara, Junichi; Tazuke, Kazuo; and Wasa, Kiyotaka, 4,363,990, Cl. 310-313.00C.
TDK Electronics Co., Ltd.: *See*—
Umeki, Shinji; and Takada, Kazuo, 4,363,831, Cl. 427-127.000.
Tebbit, Guy L.: *See*—
Kunz, Lee R.; and Tebbit, Guy L., 4,363,290, Cl. 119-3.000.
Technal International: *See*—
Bos, Andre, 4,363,467, Cl. 256-68.000.
Tedder, Joseph A., to Combustion Engineering, Inc. Tool for remotely installing equipment through an access opening. 4,363,592, Cl. 414-590.000.
Tegelman, Harold, Jr.: *See*—
Cottrell, Merlyn F.; Tegelman, Harold, Jr.; Holmes, Ronald E.; and Hofferber, John R., 4,363,959, Cl. 219-532.000.
Teijin Limited: *See*—
Masuho, Yasuhiko; Kishida, Kazuo; and Hara, Takeshi, 4,363,758, Cl. 260-112.00B.
Teledyne Industries, Inc.: *See*—
Leblanc, Raymond F.; and Cummins, William T., 4,363,474, Cl. 267-140.000.
Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper-chain conveyors. 4,363,398, Cl. 198-735.000.
Teramachi, Hiroshi. Linear motion ball bearing unit. 4,363,526, Cl. 308-6.00C.
Teranchi, Iraj: *See*—
Tichy, Oldrich J.; and Teranchi, Iraj, 4,363,266, Cl. 99-545.000.
Terashima, Minoru: *See*—
Koyama, Masataka; Satoh, Kiyoshi; and Terashima, Minoru, 4,364,099, Cl. 361-305.000.
Texas A&M University System, The: *See*—
Nagyvary, Joseph J., 4,363,801, Cl. 424-180.000.
Texas Instruments Deutschland GmbH: *See*—
Guth, Friedrich, 4,364,086, Cl. 358-101.000.
Texas Instruments Incorporated: *See*—
Chatterjee, Pallab K.; and Tasch, Aloysious F., Jr., 4,364,076, Cl. 357-24.000.
Penz, Perry A., 4,364,039, Cl. 340-784.000.
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.
Texon Inc.: *See*—
Waterhouse, John F., 4,363,856, Cl. 429-143.000.
Thaer, Andreas; Hagner, Willi; Frimmel, Horst; and Riegel, Horst, to Ernst Leitz Wetzlar GmbH. Instrument base for optical devices. 4,363,536, Cl. 351-245.000.
Thebert, Glenn W., to General Motors Corporation. Variable vane mounting. 4,363,600, Cl. 415-156.000.
Thermo Electron Corp.: *See*—
Poirier, Victor L.; Buczak, Stanley D.; Lynch, Robert F.; and Salvo, Thomas R., 4,363,328, Cl. 128-728.000.
Thiebault, Bernard, to Seplast. Process for the superficial treatment of a fibrous filtering layer, which is non-woven and highly aerated, forming electret. 4,363,682, Cl. 156-181.000.
Tholen, Paul: *See*—
Stock, Hugo; and Tholen, Paul, 4,363,301, Cl. 123-321.000.
Thoma, Nandor G.: *See*—
Garnache, Richard R.; Kenney, Donald M.; and Thoma, Nandor G., 4,364,074, Cl. 357-23.000.
Thomas, David H., to Imperial Chemical Industries Limited. Machine and part therefor. 4,363,616, Cl. 425-339.000.
Thomi, Michel; and Studer, Raymond, to Compagnie des Montres Longines Francillon S.A. Watch mechanism incorporating two barrels. 4,363,553, Cl. 368-140.000.
Thompson, Charles R.: *See*—
Martin, Henry; and Thompson, Charles R., 4,363,277, Cl. 105-201.000.
Thomson-CSF: *See*—
Castera, Jean P.; and Dupont, Jean M., 4,364,013, Cl. 324-260.000.
Thrasher, Howard. Split race bearing. 4,363,527, Cl. 308-184.00R.
Thurston, Kelly W., to General Motors Corporation. Diesel engine with blowby scavenging. 4,363,310, Cl. 123-572.000.
Tichy, Oldrich J.; and Teranchi, Iraj, to Atlas Pacific Engineering Company. Machine for slicing unpeeled apples into rings. 4,363,266, Cl. 99-545.000.
Tietgen, Hans P.; and Riese, Gunter, to Bastian Belzona Verfahrenstechnik, Wolfgang Bastian. Supporting pad for hatch covers of ships. 4,363,283, Cl. 114-201.00R.
Tioxide Group Limited: *See*—
Willison, Geoffrey; and Hodge, John C. W., 4,363,888, Cl. 523-502.000.
Todd, Alan M. M.: *See*—
Yamada, Masaaki; Furth, Harold P.; Stix, Thomas H.; and Todd, Alan M. M., 4,363,776, Cl. 376-137.000.
Tohoku Metal Industries: *See*—
Nishimura, Naozumi; Matsunaga, Akira; and Ishii, Yasuo, 4,363,678, Cl. 149-6.000.
Tokitou, Kouji: *See*—
Shibue, Toshiaki; Nagayasu, Koichi; Kobayashi, Tohru; and Tokitou, Kouji, 4,363,871, Cl. 430-523.000.
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Elastic surface wave device. 4,364,017, Cl. 333-194.000.
Tokyo Electric Company, Ltd.: *See*—
Fujii, Kunihiko; and Nishiyama, Yoshihisa, 4,363,693, Cl. 156-360.000.
Tanioka, Susumu; Sasaki, Akiyoshi; and Hoshino, Shozi, 4,363,265, Cl. 99-510.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Akamatsu, Akihiro; Takeuchi, Masaki; and Yamashita, Kiyoshi, 4,363,781, Cl. 422-65.000.
Anno, Gousuke; and Oozeki, Takashi, 4,364,063, Cl. 346-76.0PH.
Masuda, Eiji; and Suzuki, Yasoji, 4,364,028, Cl. 340-347.0NT.
Matsuda, Satoshi; and Kiyohara, Etsuo, 4,363,985, Cl. 310-184.000.
Mine, Susumu, 4,363,773, Cl. 376-142.000.
Nagakubo, Yoshihide; and Iizuka, Hisakazu, 4,363,696, Cl. 156-653.000.
Okado, Chihiro; and Ugai, Isami, 4,364,109, Cl. 363-41.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,364,091, Cl. 358-148.000.
Takigawa, Tadahiro; Sasaki, Isao; and Tsuji, Kazuo, 4,363,995, Cl. 313-346.00R.
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, 4,364,017, Cl. 333-194.000.
Toshimitsu, Kenshi; Kanazashi, Akihiro; and Kohyama, Mitsuaki, 4,363,550, Cl. 355-3.0TR.
Tsunoda, Sachio; and Shirasu, Katsunori, 4,363,597, Cl. 415-1.000.
Yamashita, Kiyoshi, 4,363,782, Cl. 422-65.000.
Tolly, Milton C.: *See*—
Settineri, William J.; Klassen, Harold E.; and Tolly, Milton C., 4,363,673, Cl. 134-2.000.
Tomita, Masahiro: *See*—
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,363,644, Cl. 55-523.000.
Tomy Kogyo Company, Inc.: *See*—
Minami, Koichi, 4,363,483, Cl. 273-85.00C.
Shinohara, Masao, 4,363,187, Cl. 46-211.000.
Tonka Corporation: *See*—
Masubuchi, Hiroshi, 4,363,185, Cl. 46-209.000.
Tonomura, Kenichi; and Takahashi, Kyoichi, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Phase detection circuit and automatic tint control circuit of color television receiver utilizing the same. 4,364,082, Cl. 358-28.000.
Toray Industries, Inc.: *See*—
Ohshita, Hiroshi; and Tsutsumi, Tadao, 4,363,890, Cl. 524-101.000.
Torii, Michihiro; Okuda, Masanao; and Suzuki, Yuzuru, to Fuji Electrochemical Co., Ltd. Digitally controlled brushless motor. 4,363,984, Cl. 310-156.000.
Torobin, Leonard B. Method and apparatus for producing microfilaments. 4,363,646, Cl. 65-5.000.
Toshiba Machine Company Limited: *See*—
Takigawa, Tadahiro; Sasaki, Isao; and Tsuji, Kazuo, 4,363,995, Cl. 313-346.00R.
Toshimitsu, Kenshi; Kanazashi, Akihiro; and Kohyama, Mitsuaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording sheet separating device in a transfer-type electronic copying machine. 4,363,550, Cl. 355-3.0TR.
Towlson, Howard E., to General Electric Company. Light valve disk assembly and method of assembling the same. 4,363,535, Cl. 350-361.000.
Towmotor Corporation: *See*—
Melocik, Grant C.; and Wiblin, Wayne T., 4,364,022, Cl. 338-32.00H.
Toya, Mitsuo, to Hitachi, Ltd. Mobile radio telephone system. 4,363,935, Cl. 179-2.0EA.
Toyo Garssu Kabushiki Kaisha: *See*—
Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, 4,363,649, Cl. 65-158.000.
Toyo Kogyo Co., Ltd.: *See*—
Watanabe, Kenichi; Katayama, Kazuo; and Kijima, Takao, 4,363,499, Cl. 280-775.000.
Toyono, Tsutomu: *See*—
Nakamura, Shunji; Kanbe, Junichiro; Toyono, Tsutomu; Takahashi, Tohru; and Tamura, Yasuyuki, 4,363,861, Cl. 430-97.000.
Toyota Jidosha Kigyo Kabushiki Kaisha: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,363,885, Cl. 523-212.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kawai, Hisasi; Sakurai, Kazuhiro; and Matsumoto, Muneaki, 4,363,210, Cl. 60-276.000.
Ogawa, Hisashi, 4,363,500, Cl. 280-802.000.
Toyotomi Kogyo Co., Ltd.: *See*—
Nakamura, Kazuharu; Nakanishi, Yutaka; and Yamada, Toshihiko, 4,363,620, Cl. 431-33.000.
Nakamura, Kazuharu; Matsumoto, Motoki; and Kondo, Akinobu, 4,363,621, Cl. 431-90.000.
Tran, Luan G.: *See*—
Chodak, Jan B.; and Tran, Luan G., 4,363,489, Cl. 273-237.000.
Traunecker, Werner: *See*—
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; Reichl, Richard; and Traunecker, Werner, 4,363,814, Cl. 424-272.000.
Tregubenko, Viktor V.: *See*—
Shushlebin, Boris A.; Bogdanov, Nikolai A.; Tregubenko, Viktor V.; Subbotin, Nikolai I.; and Galkin, Mikhail V., 4,363,658, Cl. 75-84.000.

Trentham Corporation: *See*—
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,363,791, Cl. 423-243.000.
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., to Trentham Corporation. Alkanolaminium carboxylate solvents for selective SO_2 absorption. 4,363,791, Cl. 423-243.000.
Triller, Adolf: *See*—
Wieczorek, Hanne-Lore; Triller, Adolf; and Gassenhuber, Helmut, 4,364,107, Cl. 362-285.000.
Trotter, Jimmy R.: *See*—
Joyner, Frederick B.; Trotter, Jimmy R.; and McConnell, Richard L., 4,363,908, Cl. 528-302.000.
TRW Inc.: *See*—
Andrews, Sydney A., 4,363,420, Cl. 220-307.000.
Tsay, Yun-Tyng. Alarming seismometer. 4,364,033, Cl. 340-690.000.
Tsuchiya, Noriyuki: *See*—
Noguchi, Kosaku; Tanaka, Honami; Kumura, Yukimasa; Kitajima, Eiji; Tsuchiya, Noriyuki; and Sunada, Tomonori, 4,363,670, Cl. 106-278.000.
Tsuchiya, Tadashi: *See*—
Kawasaki, Takao; Osaka, Yoshiaki; and Tsuchiya, Tadashi, 4,363,813, Cl. 424-270.000.
Tsuda, Toshitaka; Murano, Kazuo; Yamaguchi, Kazuo; Chujo, Takafumi; Murakami, Norio; and Takahashi, Motohide, to Fujitsu Limited. Device for discriminating between two values of a signal with DC offset compensation. 4,363,977, Cl. 307-358.000.
Tsuji, Kazuo: *See*—
Takigawa, Tadahiro; Sasaki, Isao; and Tsuji, Kazuo, 4,363,995, Cl. 313-346.00R.
Tsukasaki, Yasuhiro. Method and apparatus of feeding corrugated boards. 4,363,478, Cl. 271-10.000.
Tsunekawa, Masaharu: *See*—
Hirota, Akira; and Tsunekawa, Masaharu, 4,364,098, Cl. 360-108.000.
Tsunoda, Sachio; and Shirasu, Katsunori, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for operating pumps. 4,363,597, Cl. 415-1.000.
Tsutsui, Kyoji: *See*—
Sasaki, Masaomi; and Tsutsui, Kyoji, 4,363,859, Cl. 430-59.000.
Tsutsumi, Tadao: *See*—
Ohshita, Hiroshi; and Tsutsumi, Tadao, 4,363,890, Cl. 524-101.000.
Tsuya, Noboru; and Arai, Kenichi, to Tsuya, Noboru. Method for manufacturing thin and flexible ribbon wafer of semiconductor material and ribbon wafer. 4,363,769, Cl. 264-85.000.
Tuck, Brian: *See*—
Dingwall, John G.; and Tuck, Brian, 4,363,923, Cl. 549-329.000.
Tults, Juri: *See*—
French, Michael P.; and Tults, Juri, 4,364,094, Cl. 358-193.100.
Tupitsyn, Konstantin K.: *See*—
Nikolaev, Igor V.; Evpolov, Vladimir A.; Dronova, Lidia M.; Lednikov, Anatoly I.; Moskvin, Mikhail A.; Sutyagin, Oleg Y.; Yankovsky, Oleg A.; Kilin, Viktor E.; Kolmyk, Evgeny S.; Tupitsyn, Konstantin K.; and Makarov, Alexei M., 4,363,365, Cl. 173-139.000.
Tyler, Derek E.: *See*—
Pryor, Michael J.; and Tyler, Derek E., 4,363,352, Cl. 164-418.000.
Ube Industries, Ltd.: *See*—
Fukui, Kiyoshi; Kakeya, Noboru; Jibiki, Hiroshi; and Kita, Junichiro, 4,363,916, Cl. 548-313.000.
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,363,885, Cl. 523-212.000.
Uchida, Hiroyasu: *See*—
Matsuda, Yasumasa; Sagae, Syoji; Kasahara, Masatoshi; and Uchida, Hiroyasu, 4,364,070, Cl. 346-140.00R.
Uchidoi, Masanori: *See*—
Takishima, Yoshiyuki; Mashimo, Yukio; Uchidoi, Masanori; Aizawa, Hiroshi; Andresen, Bernhard H.; Martin, Robert C.; and Kwan, Stephen C., 4,363,540, Cl. 354-23.00D.
Uchino, Noriyuki; and Ono, Toru, to Lion Corporation, The. Liquid alpha-olefin sulfonate shampoo composition with increased low temperature stability. 4,363,755, Cl. 252-545.000.
Ueda, Koichiro: *See*—
Tanaka, Satoru; Shimada, Katsutoshi; Hashimoto, Kazunori; Ema, Kiichi; and Ueda, Koichiro, 4,363,921, Cl. 549-74.000.
Ueda, Michio: *See*—
Tamai, Masayoshi; Ueda, Michio; and Kikuchi, Masatsugu, 4,364,058, Cl. 346-75.000.
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Cerrato, Vincent J., 4,363,336, Cl. 137-212.000.

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Raucci, Charles C., Jr.; and Raucci, Timothy J., 4,363,403, Cl. 206-387.000.

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Bryer, James E.; Mayes, Alan P.; and Allen, Keith, 4,363,168, Cl. 29-869.000.

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Vogel, Roger F.: *See*—
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Volk, Karl, to Interholz Technik GmbH. Multiple blade circular sawing machine. 4,363,252, Cl. 83-422.000.

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Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, 4,363,308, Cl. 123-533.000.

von Blanquet, Georg, to Gaggenau-Werke Haus- und Lufttechnik GmbH. Oven with visible displays. 4,363,315, Cl. 126-273.00R.

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Savagian, Michael D., 4,363,401, Cl. 206-345.000.

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Block, Jacob, 4,363,736, Cl. 252-8.50A.

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Wada, Isao; Kido, Jun-ichiro; and Koido, Kazuo, to Oji Paper Co., Ltd. Process for pulping lignocellulosic material with an alkaline sulfide cooking liquor containing an accelerating additive and reducing assistant. 4,363,700, Cl. 162-72.000.

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Wahlstam, Hans, to Dental Therapeutics AB. Cleaning agent for dentine surfaces. 4,363,795, Cl. 424-54.000.

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Walchhutter, Ulrich. Flywheel and screw press for producing ceramic articles. 4,363,612, Cl. 425-167.000.

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Cutler, John H.; Jarvinen, Willard B.; and Walker, Loren H., 4,364,007, Cl. 324-51.000.

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Roline, Glenn; and Walmsley, Frank, 4,363,325, Cl. 128-419.0PG.

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Walz, Karl, Sr. Self-storing permanently attached can opening means. 4,363,419, Cl. 220-269.000.

Warthen, William H. Cigarette lighter support. 4,363,432, Cl. 224-247.000.

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Tachikawa, Hajime; Watanabe, Mitsuru; and Yokoyama, Kenjiro, 4,363,957, Cl. 219-497.000.

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Nishigaki, Susumu; Murano, Kanji; and Watanabe, Yoshihisa, 4,363,993, Cl. 310-332.000.

Watanabe, Yutaka; and Nishio, Hirochika, to Aisin Seiki Kabushiki Kaisha. Trim strip for vehicles. 4,363,839, Cl. 428-31.000.

Watari, Kiyoto; and Fukuda, Takeshi, to Fujitsu Limited. Semiconductor device with monitor pattern, and a method of monitoring device parameters. 4,364,010, Cl. 324-158.00T.

Watari, Masao: *See*—
Onodera, Toru; Ohsawa, Akira; Nishino, Hideki; and Watari, Masao, 4,364,112, Cl. 364-200.000.

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Kirkpatrick, C. Virginia; and Watson, Grace E., 4,363,628, Cl. 434-107.000.

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Weaver, Robert J.: *See*—
Crockett, Dennis D.; and Weaver, Robert J., 4,363,676, Cl. 148-24.000.

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Lutz, Alfons; and Jardin, Hans, 4,363,515, Cl. 296-222.000.

Weber, Klaus, to Carl Zeiss-Stiftung. Automatic substage illumination for microscopes. 4,363,532, Cl. 350-523.000.

Wegner, Gunter H., to Reeves Brothers, Inc. Method for producing flame retardant flexible polyurethane foams with blends of dibromoneopentyl glycol and flame retardant plasticizer. 4,363,882, Cl. 521-107.000.

Weiss, Donald E.; Kolarik, Luis O.; Priestley, Anthony J.; and Anderson, Nevil J., to Commonwealth Scientific & Industrial Research Organization. Water clarification coagulant/adsorbent. 4,363,749, Cl. 252-455.00R.

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Demus, Dietrich; Weissflog, Wolfgang; Zaschke, Horst; Wolff, Rudolf; and Kresse, Horst, 4,363,767, Cl. 260-463.000.

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Marko, Magda; and Welle, Hendricus B. A., 4,363,809, Cl. 424-260.000.

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Reczek, James A.; and Welter, Thomas R., 4,363,865, Cl. 430-223.000.

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Weseloh, William E., to Orshansky Transmission Corporation. Transmission with a first-stage hydrostatic mode and two hydromechanical stages. 4,363,247, Cl. 74-687.000.

West, Julian W.: *See*—
Christain, Ronald W.; Pommerening, Uwe A.; Russell, Stanley L.; Slingsby, Barry; and West, Julian W., 4,363,936, Cl. 179-18.00E.

Western Electric Co., Inc.: *See*—
Carr, Susan H.; Schobert, Monique A.; and Taylor, John J., 4,363,449, Cl. 241-21.000.

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Brockmeyer, Hans P., 4,364,101, Cl. 362-80.000.

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Bains, Gurdip S., 4,363,201, Cl. 52-584.000.
Graff, Eugene A.; and Rusch, Larry P., 4,363,998, Cl. 313-487.000.
Halstead, Kenneth G.; and Benbow, Eugene C., 4,364,009, Cl. 324-116.000.
Lin, Kou C.; and Ellis, Belvin B., 4,364,020, Cl. 336-212.000.
Schreiner, Charles P., 4,363,496, Cl. 280-47.350.
Woolfson, Martin G., 4,364,089, Cl. 358-125.000.

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Westran Corporation: *See*—
Jocz, Armin E., 4,364,111, Cl. 364-175.000.

Wetlesen, Gunnar: *See*—
Smith, Paul W.; Freeman, James J.; Forsythe, Donald D.; Shyam, Megha; Yagura, Kenneth K.; and Wetlesen, Gunnar, 4,364,078, Cl. 357-52.000.

Wetmore, Halsey J., to Adams Hard-Facing Company, Inc. Plow chisel with pointed shank having pointed chisel cap secured thereto by weld. 4,363,364, Cl. 172-732.000.

Wetzel, Donald C.: *See*—
Paddon, Christopher M.; and Wetzel, Donald C., 4,363,368, Cl. 177-144.000.

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Magerlein, Barney J.; and Whaley, Howard A., 4,363,922, Cl. 549-266.000.

Wheatley, Carl F., Jr.: *See*—
Becke, Hans W.; and Wheatley, Carl F., Jr., 4,364,073, Cl. 357-23.000.

White, Rollin T., to NJM, Inc. Package label and manufacture of same. 4,363,685, Cl. 156-212.000.

Whitney, Solon G.; and Erickson, William R., to American Petro Mart, Inc. Method of selectively removing adsorbed calcium and magnesium from cation exchange resins. 4,363,880, Cl. 521-26.000.

Whittle, William C. Hand tool actuator. 4,363,476, Cl. 269-96.000.

Wiblin, Wayne T.: *See*—
Melocik, Grant C.; and Wiblin, Wayne T., 4,364,022, Cl. 338-32.00H.

Wibrow, Gunter, to ITW Ateco GmbH. Fastening element of synthetic material. 4,363,160, Cl. 24-297.000.

Wieczorek, Hanne-Lore; Triller, Adolf; and Gassenhuber, Helmut, to Optische Werke G. Rodenstock. Method and device for using mass-produced light-emitting diodes at a predetermined luminance. 4,364,107, Cl. 362-285.000.

Wildlife Vaccines, Inc.: *See*—
Kunz, Lee R.; and Tebbit, Guy L., 4,363,290, Cl. 119-3.000.

Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active amides. 4,363,800, Cl. 424-177.000.

Willam, Franz. Device for measuring the breath of patients. 4,363,238, Cl. 73-204.000.

Willemsens, Albert: *See*—
Albert, Rudolf; Willemsens, Albert; and van der Veken, Guido, 4,363,918, Cl. 548-531.000.

Willi, Albert; Maute, Willy; and Mooser, Oswaldo, to Societe D'Assistance Technique pour Produits Nestle S.A. Process for the production of a food base instantaneously dispersible in water. 4,363,824, Cl. 426-589.000.

Williams, Charles E., to Hester Industries, Inc. Efficient high humidity food processing system with sanitizing improvements. 4,363,263, Cl. 99-352.000.

Williams, David E.; Verma, Kamal K.; and Fisher, John M., to IMI Kynoch Limited. Anode. 4,363,706, Cl. 204-105.00R.

Williams, Joseph R.: *See*—
Keller, Alex J.; Fechner, Erchard A.; and Williams, Joseph R., 4,363,585, Cl. 414-273.000.

Williams, Richard E.; and Budden, Kenneth J. Ladder securing devices and ladder assembly. 4,363,378, Cl. 182-93.000.

Williams, Robert O. Method for making pipe insulator. 4,363,681, Cl. 156-64.000.

Willison, Geoffrey; and Hodge, John C. W., to Tioxide Group Limited. Bead polymerization process. 4,363,888, Cl. 523-502.000.

Willmar Schwabe, Firma: *See*—
Klessing, Klaus; Chatterjee, Shyam S.; and Gabard, Bernard L., 4,363,805, Cl. 424-230.000.

Willson, Allan C. Wood stove having catalytic converter. 4,363,785, Cl. 422-173.000.

Wilson, Gordon R.: *See*—
Wisdom, Lawrence W.; and Wilson, Gordon R., 4,363,575, Cl. 406-122.000.

Wilson, Kenneth T. Thermoelectric generator panel and heater device therefor. 4,363,927, Cl. 136-206.000.

Wilson, Kenneth T. Thermoelectric generator panel and cooling device therefor. 4,363,928, Cl. 136-206.000.

Windeler, Alfred S. Method of fabricating a dental prosthesis. 4,363,627, Cl. 433-167.000.

Winsel, Augut, to Varta Batterie Aktiengesellschaft. Galvanic primary element. 4,363,855, Cl. 429-101.000.

Winterstein, Jeffrey L.: *See*—
Olashaw, William F.; Postlethwait, James H.; and Winterstein, Jeffrey L., 4,363,528, Cl. 312-292.000.

Wisdom, Lawrence W.; and Wilson, Gordon R., to Frito-Lay, Inc. Liquid-solid contacting apparatus. 4,363,575, Cl. 406-122.000.

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Luebben, Manfred; and Witt, Wolfram, 4,363,273, Cl. 102-431.000.

Wlodkowski, Johann; and Jungwirth, Dieter, to Dyckerhoff & Widmann Aktiengesellschaft. Recoverable formwork part for forming the anchoring location of a tendon in a concrete structural component. 4,363,462, Cl. 249-190.000.

Wloka, Gert, to Feldmuhle Aktiengesellschaft. Structural arrangement for oxide ceramic shafts. 4,363,631, Cl. 464-181.000.

Wohl, Ronald A.: *See*—
Diamond, Julius; and Wohl, Ronald A., 4,363,808, Cl. 424-248.510.

Wolf, Helmut; and Schlegel, Hans J. Device for building-up and discharging an annular dump of bulk material. 4,363,396, Cl. 198-508.000.

Wolfel, Erich R.; and Diercks, Hans-Georg. X-Ray diffraction method and apparatus. 4,364,122, Cl. 378-73.000.

Wolff, Rudolf: *See*—
Demus, Dietrich; Weissflog, Wolfgang; Zaschke, Horst; Wolff, Rudolf; and Kresse, Horst, 4,363,767, Cl. 260-463.000.

Woolfson, Martin G., to Westinghouse Electric Corp. Binary correlation video tracker. 4,364,089, Cl. 358-125.000.

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Hallenius, Tore J.; and Sagefors, Karl I., 4,363,563, Cl. 405-55.000.

Wright, Raymond E.: *See*—
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Hamprecht, Gerhard; and Wuerzer, Bruno, 4,363,651, Cl. 71-88.000.

Wunner, Roland, to Liba Maschinenfabrik GmbH. Warp knitting machine with slider needles. 4,363,224, Cl. 66-120.000.

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Kuhlman, Harry S.; and Wyvill, Jeffrey R., III, 4,363,972, Cl. 250-430.000.

Yabukawa, Kazuhisa: *See*—
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, 4,364,017, Cl. 333-194.000.

Yagura, Kenneth K.: *See*—
Smith, Paul W.; Freeman, James J.; Forsythe, Donald D.; Shyam, Megha; Yagura, Kenneth K.; and Wetlesen, Gunnar, 4,364,078, Cl. 357-52.000.

Yamada, Akira: *See*—
Koseki, Yasuo; Yamada, Akira; Nishimura, Yuusaku; and Takahashi, Sankichi, 4,363,219, Cl. 62-101.000.

Yamada, Masaaki; Furth, Harold P.; Stix, Thomas H.; and Todd, Alan M. M., to United States of America, Energy. Method and apparatus for the formation of a spheromak plasma. 4,363,776, Cl. 376-137.000.

Yamada, Takushi: *See*—
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, 4,364,017, Cl. 333-194.000.

Yamada, Toshihiko: *See*—
Nakamura, Kazuharu; Nakanishi, Yutaka; and Yamada, Toshihiko, 4,363,620, Cl. 431-33.000.

Yamada, Toyotaka; and Enomoto, Fujio. Camera. 4,363,543, Cl. 354-58.000.

Yamaguchi, Kazuo: *See*—
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Yamaguchi, Mamoru: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, 4,364,056, Cl. 346-29.000.

Yamaguchi, Shigehiro: *See*—
Ichiyama, Tadashi; Yamaguchi, Shigehiro; Iuchi, Tohru; Nakamura, Motoharu; and Suga, Yozo, 4,363,677, Cl. 148-111.000.

Yamaguchi, Takeshi: *See*—
Fukuda, Tetsuro; Matsuura, Hideo; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,363,826, Cl. 426-653.000.

Yamamori, Kiyoshi; Hiromori, Yasutaka; and Mizoguchi, Akira, to Matsushita Electric Industrial Company, Limited. Ink jet writing apparatus having a nozzle moistening device. 4,364,065, Cl. 346-140.00R.

Yamamoto, Kaichi: *See*—
Hashimoto, Yoshitaka; Shirota, Norihisa; and Yamamoto, Kaichi, 4,364,081, Cl. 358-13.000.

Yamamoto, Osamu; Takehara, Keishin; and Yasiro, Yutaka, to Nitto Boseki Co., Ltd. Alkali- and heat-resistant inorganic fiber. 4,363,878, Cl. 501-36.000.

Yamane, Kazumasa; Kobayashi, Masahiro; and Takada, Masahiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride copolymer and composition containing the same. 4,363,903, Cl. 526-273.000.

Yamashita, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Discrete type automated chemical analytic apparatus. 4,363,782, Cl. 422-65.000.

Yamashita, Kiyoshi: *See*—
Akamatsu, Akihiro; Takeuchi, Masaki; and Yamashita, Kiyoshi, 4,363,781, Cl. 422-65.000.

Yamashita, Koji, to Nippon Electric Co., Ltd. Mobile antenna mounting assembly with resilient locking means. 4,364,051, Cl. 343-715.000.

Yamato, Yoshihiro; Ogawa, Kazuaki; Satoh, Hiromasa; Chiku, Kiyoshi; and Okada, Hideo, to Toyo Garasu Kabushiki Kaisha. Apparatus for inspection of glass containers. 4,363,649, Cl. 65-158.000.

Yamazaki, Osamu; Inohara, Junichi; Tazuke, Kazuo; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave transducer. 4,363,990, Cl. 310-313.00C.

Yan, Tsoung Y.: *See*—
Pelrine, Bruce P.; Chen, Nai Y.; and Yan, Tsoung Y., 4,363,717, Cl. 208-108.000.

Yanagishima, Fumiya; Shimoyama, Yuji; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Suzuki, Munetoshi; and Ohnishi, Takeo, to Kawasaki Steel Corporation. Steel strip continuous annealing apparatus. 4,363,471, Cl. 266-111.000.

Yanagishima, Fumiya: *See*—
Shimoyama, Yuji; Yanagishima, Fumiya; Sunami, Hideo; Ida, Yukio; Katsushima, Goji; Ohnishi, Takeo; and Fukushima, Takeo, 4,363,472, Cl. 266-111.000.

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Yano, Junichi, to Daidotokushuko Kabushiki Kaisha. Magnetic filter. 4,363,729, Cl. 210-223.000.

Yase, Tomoyoshi: *See*—
Tokunaga, Shizuo; Yamada, Takushi; Yabukawa, Kazuhisa; Kita, Shigeyuki; and Yase, Tomoyoshi, 4,364,017, Cl. 333-194.000.

Yasiro, Yutaka: *See*—
Yamamoto, Osamu; Takehara, Keishin; and Yasiro, Yutaka, 4,363,878, Cl. 501-36.000.

Yasue, Kazo, to Anmin Manufacturing Co., Ltd. Process and apparatus for producing filling material. 4,363,688, Cl. 156-251.000.

Yasui, Masaaki; Matsuura, Takeshi; and Watatani, Seiji, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,363,850, Cl. 428-329.000.

Yazaki Corporation: *See*—
Suzuki, Yoshitsugu; Iizuka, Syogo; Kajiyama, Shigeo; Usui, Kenji; and Kobayashi, Masahiro, 4,363,165, Cl. 29-564.800.

Yokogawa Electric Works, Ltd.: *See*—
Suzuki, Yoshihiro; Nakagawa, Shuichi; Wako, Yasuo; Ogawa, Yoshihiro; Yamaguchi, Mamoru; and Kimura, Toshio, 4,364,056, Cl. 346-29.000.

Yokota, Masazi; and Oosaka, Shigenori, to Fuji Photo Film Co., Ltd. Device for holding a film on a focal plane. 4,363,538, Cl. 353-95.000.

Yokoyama, Kenjiro: *See*—
Tachikawa, Hajime; Watanabe, Mitsuru; and Yokoyama, Kenjiro, 4,363,957, Cl. 219-497.000.

Yonezawa, Seiji: *See*—
Maeda, Takeshi; Shigematsu, Kazuo; and Yonezawa, Seiji, 4,364,118, Cl. 369-44.000.

Yoon, Heeyoung, to Conoco Inc. Monolith heat exchange reactor. 4,363,787, Cl. 422-201.000.

Yoshida, Kazuyuki; Kaneko, Shizuo; Okawara, Mikio; and Hiroki, Terushige, to Ohkawara Mfg. Co., Ltd.; and Daiichi Seiyaku Company, Limited. Device for coating granular solids. 4,363,285, Cl. 118-19.000.

Yoshida Kogyo K.K.: *See*—
Okamura, Tatsuro; and Irifune, Hideki, 4,363,739, Cl. 252-62.000.

Yoshikuni, Yoshiaki: *See*—
Matsumura, Shingo, deceased; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; Maruo, Shigeaki; Ojima, Nobutoshi; and Konno, Kiyotaka, 4,363,802, Cl. 424-180.000.

Yoshizaki, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Process for producing compound based superconductor wire. 4,363,675, Cl. 148-11.50P.

Young, Robert F.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,363,629, Cl. 440-61.000.

Yu, Kenneth K.: *See*—
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, Neil C., 4,364,075, Cl. 357-23.000.

Yu, Ruey J.; and Van Scott, Eugene J. Alpha hydroxyacids, alpha ketoacids and their use in treating skin conditions. 4,363,815, Cl. 424-274.000.

Yudow, Bernard D.: *See*—
ElDifrawi, Ahmed A.; Blazek, Christopher F.; and Yudow, Bernard D., 4,363,703, Cl. 203-10.000.

Zadik, Joseph S.: *See*—
Bellatty, Thomas A.; Zadik, Joseph S.; and Mast, Richard, 4,364,034, Cl. 340-690.000.

Zaffran, Christian: *See*—
Bouillon, Claude; Boulogne, Jean; Guillon, Michel; Zaffran, Christian; and Koulbanis, Constantin, 4,363,796, Cl. 424-61.000.

Zahnraderfabrik Renk A.G.: *See*—
Zaunberger, Franz X.; and Kugler, Artur, 4,363,389, Cl. 192-0.042.

Zahnradfabrik Friedrichshafen, AG: *See*—
Eichele, Erich; and de Maight, Winfried, 4,363,607, Cl. 417-273.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,364,072, Cl. 357-22.000.

Zaremba, Tadeusz. Dumpling or ravioli press. 4,363,614, Cl. 425-298.000.

Zaremski, Donald R., to Allegheny Ludlum Steel Corporation. High current density, acid-free electrolytic descaling process. 4,363,709, Cl. 204-145.00R.

Zaschke, Horst: *See*—
Demus, Dietrich; Weissflog, Wolfgang; Zaschke, Horst; Wolff, Rudolf; and Kresse, Horst, 4,363,767, Cl. 260-463.000.

Zaunberger, Franz X.; and Kugler, Artur, to Zahnraderfabrik Renk A.G. Vehicle transmission control system. 4,363,389, Cl. 192-0.042.

Zhovtobrjukh, Grigory D.: *See*—
Kucher, Valery N.; Reiman, Georgy R.; Zhovtobrjukh, Grigory D.; Likhogub, Evgeny P.; Dorfman, Gersh A.; Durachenko, Mikhail I.; Minasov, Alexandr N.; Bocharov, Valentin B.; and Popenko, Alexandr Z., 4,363,702, Cl. 202-262.000.

Ziegler, Ann L., heir: *See*—
Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,363,533, Cl. 350-96.330.

Zlatic, Mark S.: *See*—
Cline, Larry D.; Hauser, Ambrose A.; Sidenstick, James E.; and Zlatic, Mark S., 4,363,599, Cl. 415-136.000.

Zum Bahlen, Ralph E.: *See*—
Michals, Richard A.; Mozer, Frank H.; and Zum Bahlen, Ralph E., 4,363,558, Cl. 400-94.000.

Zurcher, Alain: *See*—
Edney, Barry E.; and Zurcher, Alain, 4,363,451, Cl. 241-39.000.

Zweekly, Raymond T., to Valeron Corporation, The. Slotting cutter. 4,363,576, Cl. 407-50.000.

Zweifel, Hans: *See*—
Fischer, Walter; Kvita, Vratislav; and Zweifel, Hans, 4,363,917, Cl. 548-480.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alloy Surfaces Company, Inc.: *See*—
Baldi, Alfonso L.; and Damiano, Victor V., Re. 31,104, Cl. 252-466.0PT.

Baldi, Alfonso L.; and Damiano, Victor V., to Alloy Surfaces Company, Inc. Catalytic structure. Re. 31,104, Cl. 252-466.0PT.

Berghahn, Martha L.: *See*—
Berghahn, Walter G.; and Berghahn, Martha L., Re. 31,101, Cl. 206-1.500.

Berghahn, Walter G.; and Berghahn, Martha L., to Bristol-Myers Company. Child resistant package. Re. 31,101, Cl. 206-1.500.

Bristol-Myers Company: *See*—
Berghahn, Walter G.; and Berghahn, Martha L., Re. 31,101, Cl. 206-1.500.

Chouings, Leslie C. Torque limitation device for a drum brake. Re. 31,100, Cl. 188-328.000.

Damiano, Victor V.: *See*—
Baldi, Alfonso L.; and Damiano, Victor V., Re. 31,104, Cl. 252-466.0PT.

Germeraad, Paul B.: *See*—
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, Re. 31,103, Cl. 428-35.000.

Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, to Raychem Corporation. Crosslinking agent for polymers and wire construction utilizing crosslinked polymers. Re. 31,103, Cl. 428-35.000.

Jansons, Viktors: *See*—
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, Re. 31,103, Cl. 428-35.000.

Raychem Corporation: *See*—
Gotcher, Alan J.; Germeraad, Paul B.; and Jansons, Viktors, Re. 31,103, Cl. 428-35.000.

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Abbott Laboratories: *See*—
Gross, James R., 267,282, Cl. D32-51.000.

Acme-Gorick Pty. Ltd.: *See*—
Gorick, Geoffrey P.; and Day, Robert W., 267,262, Cl. D21-237.000.

Affiliated Hospital Products, Inc.: *See*—
Jemas, Noel L., 267,243, Cl. D34-21.000.

Allen, Norman H., to RAS Industries, Inc. Watch crystal protector. 267,239, 12-14-82, Cl. D10-132.000.

Aluminum Housewares Co., Inc.: *See*—
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American Home Products Corporation: *See*—
Williams, Bruce F., 267,221, Cl. D7-359.000.

American Standard Inc.: *See*—
White, Dean S.; and Shaffer, Scott A., 267,217, Cl. D6-191.000.

Aoki, Katashi. Bottle. 267,233, 12-14-82, Cl. D9-370.000.

Astra-Syntex Scandinavia Aktiebolag: *See*—
Lunden, Hans-Goran H., 267,234, Cl. D9-389.000.

Atlas Tool & Die Works, Inc.: *See*—
Mottl, Daniel J.; and Mottl, Glen J., 267,281, Cl. D32-46.000.

Balich, Diane C. Bottle. 267,232, 12-14-82, Cl. D9-311.000.

Baxter Travenol Laboratories, Inc.: *See*—
Mittleman, Herbert, 267,270, Cl. D24-24.000.

Beier, Hanns W. Twin lock key ring. 267,209, 12-14-82, Cl. D3-61.000.

Bell, Vincent G., Jr.; Burke, Thomas P.; Margolin, George D.; and Vurpillat, Victor V., to Centurion Data Corporation. Check. 267,255, 12-14-82, Cl. D19-11.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Typewriting machine. 267,253, 12-14-82, Cl. D18-1.000.

Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 267,274, Cl. D25-48.000.
Horgan, William J., Jr., 267,275, Cl. D25-48.000.
Horgan, William J., Jr., 267,276, Cl. D25-48.000.

Bulgari, Marina, to Zoldia Anstalt. Earring. 267,241, 12-14-82, Cl. D11-75.000.

Burke, Thomas P.: *See*—
Bell, Vincent G., Jr.; Burke, Thomas P.; Margolin, George D.; and Vurpillat, Victor V., 267,255, Cl. D19-11.000.

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LaViolette, Paul A.; and Caccioli, Anthony, 267,230, Cl. D8-382.000.

Centurion Data Corporation: *See*—
Bell, Vincent G., Jr.; Burke, Thomas P.; Margolin, George D.; and Vurpillat, Victor V., 267,255, Cl. D19-11.000.

Channell, William H. Wedge fastener. 267,228, 12-14-82, Cl. D8-382.000.

Chasen, Lee R.: *See*—
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Coats & Clark, Inc.: *See*—
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Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 267,258, Cl. D21-78.000.
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 267,259, Cl. D21-78.000.

Cosio, Manuel Gonzales: *See*—
Paulin, Esteban, 267,273, Cl. D24-57.000.

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Cronheim, Richard B., to Aluminum Housewares Co., Inc. Coaster. 267,220, 12-14-82, Cl. D7-45.000.

Datagraphix, Inc.: *See*—
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Day & Parsonage Publishing Co. Pty. Limited: *See*—
Gorick, Geoffrey P.; and Day, Robert W., 267,262, Cl. D21-237.000.

Day, Robert W.: *See*—
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Dew, Robert C.: *See*—
Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,223, Cl. D23-138.500.

Ditto, Donald R. Metal sculpture. 267,240, 12-14-82, Cl. D11-157.000.

Doman, Donald W.; and Elsner, Alfred W., to Kohler Co. Combined island hydrotherapy spa and table therefor. 267,272, 12-14-82, Cl. D24-38.000.

Einhorn, Ruediger; and Chasen, Lee R., to Coats & Clark, Inc. Magnetic rack for pot holders. 267,212, 12-14-82, Cl. D6-114.000.

Elsner, Alfred W.: *See*—
Doman, Donald W.; and Elsner, Alfred W., 267,272, Cl. D24-38.000.

Farrell, Roy C. Shower stool or similar article. 267,211, 12-14-82, Cl. D6-55.000.

Ferguson, Douglas J.: *See*—
Kowalski, Ben C.; Kowalski, Daniel J.; and Ferguson, Douglas J., 267,247, Cl. D12-157.000.

Four Star Corporation: *See*—
Kowalski, Ben C.; Kowalski, Daniel J.; and Ferguson, Douglas J., 267,247, Cl. D12-157.000.

Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Transceiver for a car telephone set. 267,249, 12-14-82, Cl. D14-68.000.

Garcia, Alexander, to Gulf & Western Manufacturing Company. Snap hook. 267,229, 12-14-82, Cl. D8-382.000.

Goldhaber, Marvin L. Window frame hinge member. 267,277, 12-14-82, Cl. D25-74.000.

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Gross, James R., to Abbott Laboratories. Sponge applicator, or the like. 267,282, 12-14-82, Cl. D32-51.000.

Guem, Thomas E., Jr. Ski pole clip. 267,231, 12-14-82, Cl. D8-395.000.

Gulf & Western Manufacturing Company: *See*—
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LaViolette, Paul A.; and Caccioli, Anthony, 267,230, Cl. D8-382.000.

Hammond, Philip S., to Goodyear Tire & Rubber Company, The. Tire. 267,246, 12-14-82, Cl. D12-148.000.

Harada, Toshio: *See*—
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, 267,222, Cl. D7-351.000.

Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., to S & T Industries, Inc. Fireplace grate. 267,223, 12-14-82, Cl. D23-138.500.

Hilton, Joseph R., to Racal Corporation. Welder's helmet. 267,207, 12-14-82, Cl. D2-232.000.

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Horgan, William J., Jr., to Blumcraft of Pittsburgh. Combined door and handle. 267,275, 12-14-82, Cl. D25-48.000.

Horgan, William J., Jr., to Blumcraft of Pittsburgh. Combined door and handle. 267,276, 12-14-82, Cl. D25-48.000.

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Hyytinen, Timo, to Valmet Oy. Gun stock butt element. 267,263, 12-14-82, Cl. D22-7.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
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Ishii, Yoshiyasu: *See*—
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Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 267,259, Cl. D21-78.000.

Iwasaki, Shinji, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle. 267,245, 12-14-82, Cl. D12-110.000.

Jemas, Noel L., to Affiliated Hospital Products, Inc. Hospital supply cart. 267,243, 12-14-82, Cl. D34-21.000.

Johnson, William H., to Shenandoah Manufacturing Co., Inc. Cast iron grate for coal burning stoves and the like. 267,266, 12-14-82, Cl. D23-135.000.

Johnson, William H., to Shenandoah Manufacturing Co., Inc. Cast iron grate for solid fuel burning stoves and the like. 267,268, 12-14-82, Cl. D23-135.000.

Jolliffe, John E., to SCM Corporation. Control knob for office machines. 267,254, 12-14-82, Cl. D18-12.000.

Jukes, Alan, to Oxoid Limited. Container for use in anaerobic bacteriology. 267,269, 12-14-82, Cl. D24-8.000.

Kanoui, Joseph, to Interdica S.A. Watch. 267,237, 12-14-82, Cl. D10-39.000.

Kelsey Hayes Co.: *See*—
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Kemper, George A., Jr. Clock. 267,236, 12-14-82, Cl. D10-23.000.

Kingsley, Robert C.: *See*—
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Kingsley, Warren W.; and Kingsley, Robert C., to Hydro-Spa, Inc. Bathing pool. 267,271, 12-14-82, Cl. D24-38.000.

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Kowalski, Ben C.; Kowalski, Daniel J.; and Ferguson, Douglas J., to Four Star Corporation. Tie down bracket for luggage rack. 267,247, 12-14-82, Cl. D12-157.000.

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LaViolette, Paul A.; and Caccioli, Anthony, to Gulf & Western Manufacturing Company. Snap hook. 267,230, 12-14-82, Cl. D8-382.000.

Link, William T.; and Hobson, Stephen, to Datagraphix, Inc. Briefcase microfiche reader. 267,251, 12-14-82, Cl. D16-18.000.

Lunden, Hans-Goran H., to Astra-Syntex Scandinavia Aktiebolag. Dispensing container for pills or the like. 267,234, 12-14-82, Cl. D9-389.000.

Margolin, George D.: *See*—
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Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 267,259, Cl. D21-78.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
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McNamara, Daniel C. Simulative picture frame. 267,219, 12-14-82, Cl. D6-243.000.

Meyer, Ronald L. Tire stripping machine or the like. 267,250, 12-14-82, Cl. D15-130.000.

Mittleman, Herbert, to Baxter Travenol Laboratories, Inc. Drip chamber spike. 267,270, 12-14-82, Cl. D24-24.000.

Mottl, Daniel J.; and Mottl, Glen J., to Atlas Tool & Die Works, Inc. Grill cleaner device. 267,281, 12-14-82, Cl. D32-46.000.

Mottl, Glen J.: *See*—
Mottl, Daniel J.; and Mottl, Glen J., 267,281, Cl. D32-46.000.

Nagode, Larry R., to Quaker Oats Company, The. Toy carousel. 267,260, 12-14-82, Cl. D21-124.000.

Nagode, Larry R., to Quaker Oats Company, The. Toy piggy bank. 267,283, 12-14-82, Cl. D99-40.000.

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Orenstein, Henry. Game table or similar article. 267,214, 12-14-82, Cl. D6-152.000.

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Jukes, Alan, 267,269, Cl. D24-8.000.

Pataluch, Casimer J. Exercise bar. 267,261, 12-14-82, Cl. D21-198.000.

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Peraino, James J., to Mattel, Inc. Set of chess pieces. 267,257, 12-14-82, Cl. D21-52.000.

Peterson, Paul D. Planter. 267,215, 12-14-82, Cl. D6-183.000.

Poteet, Tommy A., to Whittar Industries, Ltd. Steering wheel, or the like. 267,248, 12-14-82, Cl. D12-176.000.

Practical Products Mfy. Ltd.: *See*—
Yau, Andrew K., 267,278, Cl. D26-49.000.
Yau, Andrew K., 267,279, Cl. D26-49.000.

Quaker Oats Company, The: *See*—
Nagode, Larry R., 267,260, Cl. D21-124.000.
Nagode, Larry R., 267,283, Cl. D99-40.000.

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RAS Industries, Inc.: *See*—
Allen, Norman H., 267,239, Cl. D10-132.000.

Reed, Martin R.: *See*—
Weber, Franz K.; and Reed, Martin R., 267,280, Cl. D26-129.000.

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Rollei of America, Inc.: *See*—
Quinn, Peter T., 267,252, Cl. D16-42.000.

S & T Industries, Inc.: *See*—
Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,223, Cl. D23-138.500.

Schafer, Carl M., to Schafer, Carl M. Carbohydrate-calorie recorder. 267,238, 12-14-82, Cl. D10-97.000.

Schwuchow, Brian P. Snowman hat container. 267,210, 12-14-82, Cl. D3-66.000.

SCM Corporation: *See*—
Jolliffe, John E., 267,254, Cl. D18-12.000.

Shaffer, Scott A.: *See*—
White, Dean S.; and Shaffer, Scott A., 267,217, Cl. D6-191.000.

Shenandoah Manufacturing Co., Inc.: *See*—
Johnson, William H., 267,266, Cl. D23-135.000.
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Tanaka, Michio: *See*—
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, 267,222, Cl. D7-351.000.

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UPL Group Limited: *See*—
Thompson, Bruce R., 267,218, Cl. D6-243.000.

Valmet Oy: *See*—
Hyytinen, Timo, 267,263, Cl. D22-7.000.

Vurpillat, Victor V.: *See*—
Bell, Vincent G., Jr.; Burke, Thomas P.; Margolin, George D.; and Vurpillat, Victor V., 267,255, Cl. D19-11.000.
Wacker, Roger F. Manure holding tank. 267,264, 12-14-82, Cl. D23-2.000.
Weber, Franz K.; and Reed, Martin R. Lamp shade. 267,280, 12-14-82, Cl. D26-129.000.
White, Dean S.; and Shaffer, Scott A., to American Standard Inc. Universal end cap for a movable wall panel. 267,217, 12-14-82, Cl. D6-191.000.
Whitson, Robert B.: *See*—
Smith, William L.; and Whitson, Robert B., 267,242, Cl. D11-155.000.
Whittar Industries, Ltd.: *See*—
Poteet, Tommy A., 267,248, Cl. D12-176.000.
Wieting, Clifford E.: *See*—
Hassett, Robert D.; Dew, Robert C.; and Wieting, Clifford E., 267,223, Cl. D23-138.500.
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Iwasaki, Shinji, 267,245, Cl. D12-110.000.
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, to Matsushita Electric Industrial Co., Ltd. Micro-wave oven. 267,222, 12-14-82, Cl. D7-351.000.
Yamauchi, Kimpei: *See*—
Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, 267,249, Cl. D14-68.000.
Yau, Andrew K., to Practical Products Mfy. Ltd. Torch. 267,278, 12-14-82, Cl. D26-49.000.
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Ziaylek, Theodore, Jr., 267,227, Cl. D8-373.000.
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Zoldia Anstalt: *See*—
Bulgari, Marina, 267,241, Cl. D11-75.000.

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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 14, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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316	4,363,180
466	4,363,181
607	4,363,182

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85	4,363,184

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51	4,363,637

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211	4,363,187

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233	4,363,642
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292	4,363,222
303	4,363,223

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5	4,363,646
18.2	4,363,647
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484	4,363,231

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383	4,363,233
402	4,363,234

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147	4,363,237
204	4,363,238
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334	4,363,240
536	4,363,241
761	4,363,242
766	4,363,243
861.08	4,363,244
864.22	4,363,245

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89.14	4,363,246
687	4,363,247
713	4,363,248
850	4,363,249

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10 R	4,363,653
34	4,363,654
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42	4,363,656
80	4,363,657
84	4,363,658
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130 R	4,363,661
243	4,363,662

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422	4,363,252
537	4,363,253
800	4,363,254

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422	4,363,259

CLASS 92

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128	4,363,261

CLASS 99

290	4,363,262
352	4,363,263
510	4,363,264
	4,363,265
545	4,363,266

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255	4,363,267

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	4,363,269
180	4,363,270
181	4,363,271

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431	4,363,273

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21	4,363,664
38.3	4,363,665
90	4,363,666
	4,363,667
100	4,363,668
205	4,363,669
278	4,363,670

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29	4,363,279

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210	4,363,288
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CLASS 123

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51 AA	4,363,295
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179 S	4,363,298
197 AB	4,363,299
315	4,363,300
321	4,363,301
337	4,363,302
339	4,363,303
418	4,363,304
440	4,363,305
	4,363,306
492	4,363,307
533	4,363,308
552	4,363,309
572	4,363,310

CLASS 124

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45	4,363,312

CLASS 126

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390	4,363,316

CLASS 127

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46.3	4,363,672

CLASS 128

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207.14	4,363,320
214 R	4,363,321
290 R	4,363,322
419 PG	4,363,325
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660	4,363,326
719	4,363,327
728	4,363,328
765	4,363,329

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275	4,363,331
282	4,363,332
334	4,363,333

CLASS 132

33 R	4,363,334

CLASS 134

2	4,363,673
21	4,363,674
167 C	4,363,335

CLASS 136

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	4,363,928
234	4,363,929

CLASS 137

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343	4,363,337

CLASS 141

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39	4,363,339
51	4,363,340
78	4,363,341

CLASS 144

2 R	4,363,342

CLASS 145

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CLASS 148

11.5 P	4,363,675
24	4,363,676
111	4,363,677

CLASS 149

6	4,363,678
37	4,363,679

CLASS 150

3	4,363,345

CLASS 152

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411	4,363,347

CLASS 156

62.6	4,363,680
64	4,363,681
181	4,363,682
184	4,363,683
201	4,363,684
212	4,363,685
242	4,363,686
245	4,363,687
251	4,363,688
307.3	4,363,689
307.5	4,363,690
350	4,363,691
351	4,363,692
360	4,363,693
435	4,363,694
504	4,363,695
653	4,363,696

CLASS 160

84 R	4,363,348
90	4,363,349
92	4,363,350
187	4,363,351

CLASS 162

19	4,363,697
30.1	4,363,698
71	4,363,699
72	4,363,700
301	4,363,701

CLASS 164

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CLASS 165

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67	4,363,354
81	4,363,355
110	4,363,356

CLASS 166

84	4,363,357
212	4,363,358
214	4,363,359
241	4,363,360
256	4,363,361

CLASS 172

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264	4,363,363
732	4,363,364

CLASS 173

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CLASS 174

68.5	4,363,930
135	4,363,931
138 R	4,363,932

CLASS 175

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340	4,363,367

CLASS 177

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210 R	4,363,370
262	4,363,371

CLASS 178

118	4,363,933

CLASS 179

1 VL	4,363,934
2 EA	4,363,935
18 E	4,363,936
121 R	4,363,937
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175	4,363,373
209	4,363,374
227	4,363,375
275	4,363,376
282	4,363,377

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CLASS 187

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CLASS 188

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72.7	4,363,384
249	4,363,385
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331	4,363,386
333	4,363,387

CLASS 190

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CLASS 191

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CLASS 192

0.042	4,363,389
46	4,363,390

CLASS 193

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CLASS 194

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CLASS 198

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486	4,363,395
508	4,363,396
655	4,363,397
735	4,363,398
833	4,363,399

CLASS 200

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42 R	4,363,944
61.18	4,363,945

CLASS 202

262	4,363,702

CLASS 203

10	4,363,703
58	4,363,704

CLASS 204

5	4,363,705
105 R	4,363,706
129	4,363,707
129.75	4,363,708
145 R	4,363,709
181 C	4,363,710
192 P	4,363,711
199	4,363,712
278	4,363,713

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554 4,363,405
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40 4,363,715
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257 4,363,725
436 4,363,726
546 4,363,408

CLASS 210

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521 4,363,730
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776 4,363,735

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191 4,363,411
196 4,363,412
262 4,363,413

CLASS 213

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76.12 4,363,952
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160 4,363,954
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CLASS 222

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CLASS 224

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CLASS 228

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131 4,363,435
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CLASS 229

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CLASS 232

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CLASS 235

454 4,363,960

CLASS 236

20 R 4,363,440
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CLASS 237

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CLASS 239

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153 R 4,363,458

CLASS 248

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201 4,363,961
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211 J 4,363,963
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111 4,363,471
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CLASS 271

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802 4,363,500
804 4,363,501
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CLASS 282

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CLASS 285

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CLASS 292

336.3 4,363,506

CLASS 293

128 4,363,507

CLASS 294

1 BB 4,363,508
82 R 4,363,509
162 4,363,514

CLASS 296

37.16 4,363,510
97 G 4,363,512
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195 4,363,516
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CLASS 299

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CLASS 301

37 P 4,363,520
63 R 4,363,521
131 4,363,522

CLASS 303

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4,363,524

CLASS 307

10 R 4,363,973
40 4,363,974
150 4,363,975
353 4,363,976
358 4,363,977
451 4,363,978
519 4,363,979

CLASS 308

6 C 4,363,526
10 4,363,525
184 R 4,363,527

CLASS 310

15 4,363,980
52 4,363,981
61 4,363,982
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184 4,363,985
214 4,363,986
216 4,363,987
268 4,363,988
306 4,363,989
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316 4,363,991
323 4,363,992
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53 4,363,999
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CLASS 324

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58.5 R 4,364,008
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20 4,364,021
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6 R 4,364,049
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4,364,059
4,364,060
4,364,061
4,364,062
76 PH 4,364,063
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4,364,069
4,364,070
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CLASS 353

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60 R 4,363,544
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212 4,363,547
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3 FU 4,363,549
3 TR 4,363,550

CLASS 356

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23 4,364,073
4,364,074
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24 4,364,076
30 4,364,077
52 4,364,078

CLASS 358

10 4,364,079
4,364,080
13 4,364,081
28 4,364,082
69 4,364,083
76 4,364,084
81 4,364,085
101 4,364,086
105 4,364,087
106 4,364,088
125 4,364,089
140 4,364,090
148 4,364,091
167 4,364,092
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193.1 4,364,094
245 4,364,095

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70 4,364,097
108 4,364,098

CLASS 361

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CLASS 362

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123 4,364,102
200 4,364,103
223 4,364,104
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374 4,364,108

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CLASS 364

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CLASS 368

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291 4,363,555

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138 4,364,120
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CLASS 372

53 4,364,015

CLASS 374

183 4,363,556

CLASS 376

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133 4,363,775
137 4,363,776
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228 4,363,778
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154 4,363,579

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408 4,363,588
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53 T 4,363,598
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230 4,363,602
244 R 4,363,603
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273 4,363,607
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454	4,363,659
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65	4,363,781
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68	4,363,783
134	4,363,784
173	4,363,785
189	4,363,786
201	4,363,787
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9	4,363,788
79	4,363,789
230	4,363,790
243	4,363,791
335	4,363,792
CLASS 424	
1	4,363,793
52	4,363,794
54	4,363,795
61	4,363,796
70	4,363,797
84	4,363,798
85	4,363,799
177	4,363,800
180	4,363,801
	4,363,802
	4,363,803
200	4,363,804
230	4,363,805
241	4,363,806
246	4,363,807
248.51	4,363,808
260	4,363,809
267	4,363,811
269	4,363,812
270	4,363,813
272	4,363,814
274	4,363,815
	4,363,816
311	4,363,817
319	4,363,818
CLASS 425	
89	4,363,610
97	4,363,611
167	4,363,612
237	4,363,613
298	4,363,614
339	4,363,616
363	4,363,615
388	4,363,617
458	4,363,618
525	4,363,619
CLASS 426	
132	4,363,819
257	4,363,820
262	4,363,810
393	4,363,821
513	4,363,822
542	4,363,823
589	4,363,824
617	4,363,825
653	4,363,826
CLASS 427	
8	4,363,827
39	4,363,828
53.1	4,363,829
88	4,363,830
127	4,363,831
183	4,363,832
211	4,363,833
296	4,363,834
355	4,363,835
393.6	4,363,836
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26	4,363,837
31	4,363,838
	4,363,839
35	Re.31,103
	4,363,840
	4,363,841
36	4,363,842
43	4,363,843
65	4,363,844
198	4,363,845
203	4,363,846
283	4,363,847
286	4,363,848
318.8	4,363,849
329	4,363,850
333	4,363,851
432	4,363,852
480	4,363,853
632	4,363,854
CLASS 429	
101	4,363,855
143	4,363,856
234	4,363,857
CLASS 430	
56	4,363,858
59	4,363,859
83	4,363,860
97	4,363,861
98	4,363,862
115	4,363,863
202	4,363,864
223	4,363,865
290	4,363,866
302	4,363,867
314	4,363,868
427	4,363,869
510	4,363,870
523	4,363,871
532	4,363,872
546	4,363,873
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362	4,363,622
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219	4,363,623
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9	4,363,624
74	4,363,625
85	4,363,626
167	4,363,627
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107	4,363,628
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108	4,363,875
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61	4,363,629
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181	4,363,631
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36	4,363,878
44	4,363,879
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26	4,363,880
56	4,363,881
107	4,363,882
122	4,363,883
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156	4,363,884
212	4,363,885
336	4,363,886
402	4,363,887
502	4,363,888
513	4,363,889
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101	4,363,890
317	4,363,891
327	4,363,892
376	4,363,893
494	4,363,894
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54.21	4,363,895
110	4,363,896
195	4,363,897
404	4,363,898
437	4,363,899
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97	4,363,901
114	4,363,902
273	4,363,903
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302	4,363,908
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172	4,363,910
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273	4,363,912
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265	4,363,915
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266	4,363,922
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509	4,363,924
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415	4,363,925
442	4,363,926
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281	4,363,323

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D6—	55	267,211
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	123	267,213
	152	267,214
	183	267,215
	189	267,216
	191	267,217
	243	267,218
		267,219
D7—	45	267,220
	351	267,222
	359	267,221
D8—	62	267,224
	95	267,225
	353	267,226
	373	267,227
	382	267,228
		267,229
		267,230
	395	267,231
D9—	311	267,232
	370	267,233
	389	267,234
D10—	15	267,235
	23	267,236
	39	267,237
	97	267,238
	132	267,239
D11—	75	267,241
	155	267,242
	157	267,240
D12—	102	267,244
	110	267,245
	148	267,246
	157	267,247
	176	267,248
D14—	68	267,249
D15—	130	267,250
D16—	18	267,251
	42	267,252
D18—	1	267,253
	12	267,254
D19—	11	267,255
	56	267,256
D21—	52	267,257
	78	267,258
		267,259
	124	267,260
	198	267,261
	237	267,262
D22—	7	267,263
D23—	2	267,264
	93	267,265
	135	267,266
		267,268
	137	267,267
	138.5	267,223
D24—	8	267,269
	24	267,270
	38	267,271
		267,272
	57	267,273
D25—	48	267,274
		267,275
		267,276
	74	267,277
D26—	49	267,278
		267,279
	129	267,280
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02 : 4,363,464	4,363,690	4,363,728	4,363,571	4,363,388	4,363,691
04 : 4,363,177	4,363,705	4,363,803	4,363,579	4,363,412	4,363,792
4,363,326	4,363,726	4,363,966	4,363,595	4,363,455	4,363,821
4,363,427	4,363,747	4,363,972	4,363,604	4,363,551	4,363,896
4,363,516	4,363,804	4,364,068	4,363,629	4,363,724	4,363,922
4,363,652	4,363,820	10 : 4,363,825	4,363,672	4,363,736	4,364,111
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